Critical Studies
in the
Phonetic Observations
of
Indian Grammarians

BY

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Dr. Siddheshwar Varma is, in one word, a 'world-celebrity' in the field of Phonetics and Linguistics. His researches on the Lahanda group of languages of the North-west Frontier, his studies in Sanskrit Phonetics as in his Etymologies of Yaska etc. have won him such a high place of honour which can be the envy of any Phonetician, and Linguistician. That his works have been published by institutions like the Royal Asiatic Society of London in the past is in itself an eloquent tribute to this great Indian Scholar.

The present work, broad in its scope and original in its approach, is an attempt to give a general conspectus of Indian Phonetic Literature.

Rupees Twenty

CRITICAL STUDIES IN THE PHONETIC OBSERVATIONS OF INDIAN GRAMMARIANS

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FOREWORD

THE treatise is an attempt, for the first time in a modern language, to give a general conspectus of Indian phonetic literature.

The introduction (pp. 1-54) gives a chronological survey of Indian works on phonetics, fifty-five of which have been examined (cf. p. 29). Of these sixteen are absolutely new, being MS. works.

The main body of the treatise (pp. 55-187) is a critical examination of some of the phonetic opinions expressed in Indian phonetic literature and in the works of Pāṇini, Patañjali, etc. The treatise consists of eleven chapters (for detailed plan of these chapters see pp. 18 f.). Of these, the first four deal with the syllabication of sound-groups. Chapter V. examines the opinions on doubling. Chapter VI. on the pronunciation of *y* and *v* in different positions. Chapter VII. on Svarabhakti and its bearing on the dialects. Chapter VIII. examines the fundamental basis of the Indian theory of syllabication—viz., Abhinidhāna or incomplete articulation. Chapter IX. deals with nasalization—a striking fact in the living languages. Chapter X. discusses the opinions on the nature of accent. Chapter XI. describes the various views on quantity.

It has been shown that these opinions were on the whole sound, and that some of them may be helpful to modern linguistics (cf. pp. 19 f.).

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LIST OF ABBREVIATIONS

Atharv. Prāt...	Atharva Veda Prātiśākhya. Ed. Whitney. 1862.
Bloch	"La formation de la langue marathe." By Jules Bloch. 1915, 1919.
BSOS ..	*Bulletin of the School of Oriental Studies.*
Cār. or Cārā.	Cārāyaṇīya.
Chatterji ..	"The Origin and Development of the Bengali Language." 1926.
Cunningham ..	"Inscriptions of Aśoka." By A. Cunningham. 1877.
Geiger ..	"Pāli Literatur und Sprache." By Wilhelm Geiger. 1916.
Gött. Gel. Anz.	*Göttinger Gelehrte Anzeigen.*
Hultzsch ..	"Inscriptions of Aśoka." By E. Hultzsch. 1925.
IF	Indogermanische Forschungen.
Ind. Stud. ..	"Indische Studien." Ed. Weber.
JRAS ..	*Journal of the Royal Asiatic Society.*
Māṇḍū. ..	Māṇḍūkī.
MSLP	"Mémoires de la Société de Linguistique de Paris."
Pāṇ.	Pāṇini.
Pār. or Pārā. ..	Pārāśarī.
Pischel ..	"Grammatik der Prakrit-Sprachen." By R. Pischel. 1900.
Rāṣṭrp. ..	Rāṣṭrapālaparipṛcchā. Ed. L. Finot (Bibliotheca Buddhica). 1901.
Ṛg Prāt. ..	Ṛgveda Prātiśākhya. Ed. Max Müller. 1870.
Ṛkt.	Ṛktantravyākaraṇa. Ed. A. C. Burnell. 1879.
Siddh. ..	Siddhānta.
Ś. or Śik. ..	Śikṣā.
ŚS	Śikṣāsaṃgraha. Benares Sanskrit Series. 1893.
Śksm. ..	Śikṣāsamuccaya. Ed. C. Bendall (Bibliotheca Buddhica). 1897.
Taitt. Prāt. ..	Taittirīya Prātiśākhya. (Bibliotheca Sanskritica.) 1907.
Vāj. Prāt. ..	Vājasaneyi Prātiśākhya. Benares Sanskrit Series. 1883–1888.
Varṇ. or Varṇa.	Varṇa-ratna-dīpikā.
Vedica ..	"Vedica und Verwandtes." By T. Benfey. 1877.
Wackernagel ..	"Altindische Grammatik" (Vol. I.). By J. Wackernagel. 1896.
Yājñ.	Yājñavalkya.
ZDMG ..	*Zeitschrift der Morgenländischen Gesellschaft.*

CRITICAL STUDIES IN THE PHONETIC OBSERVATIONS OF INDIAN GRAMMARIANS

INTRODUCTION

THE study of phonetics was pursued in ancient India with an interest which has few parallels in antiquity. The germs of this interest may be traced in the Ṛgveda, which dedicates two entire hymns[1] to Speech. It mentions three stages in the development of language: (1) inarticulate speech, (2) primitive articulate speech, (3) language proper. As regards the first, it states[2] that three out of the four grades of speech are "deposited in secret, and move not, being inarticulate": the lowest grade of inarticulate speech, according to the explanation of the Śatapatha Brāhmaṇa,[3] being the hissing of serpents, or the humming of insects, etc., the next higher grade of inarticulate sounds being the notes of birds, and the third grade being the inarticulate speech of brutes. As regards the second stage, the Ṛgveda points out that the primitive articulations of speech were first employed by men in imparting names to objects,[4] thus leading to the third stage—viz., language proper, which "was created by the wise,[5] as men cleanse cornflour in a cribble."

A strict cleavage between inarticulate and articulate speech may be open to question, for it is difficult to determine where inarticulate speech ends and articulate speech begins. Moreover, the creation of language by men, if strictly intended, may suggest that language was independent of natural development. With these reservations, the observation of the Ṛgveda was an interesting contribution to the early history of linguistics.[6]

[1] X. 71 and X. 125. [2] I. 164, 45. [3] IV. 1, 3, 16. [4] X. 71, 1. [5] X. 71, 2.

[6] There is another well-known passage (IV. 58, 3) in which speech, according to Patañjali's interpretation (cf. the introduction to his Mahābhāṣya), is compared to a bull, the sounds of which are attributed to three organs—viz., the lungs, the throat, and the head. But as the hymn in question is dedicated to *ghṛta*, it is doubtful whether Patañjali's interpretation was relevant.

A further development of this interest may be noticed in the Aitareya Brāhmaṇa, which attributes speech to Indra,[1] and compares it to the ocean,[2] on account of its inexhaustible nature. It prescribes that the *stotriya* verses " should be recited in intermediate speech, which refines the soul,"[3] and its prescription of the *nyūṅkha* pronunciation indicates that the study of phonetics had reached a considerably advanced stage even during this period (circa 800-1000 B.C.), if the traditional data of the Āśvalāyana Śrauta Sūtra[4] are based on the actual occurrence of the pronunciation in the time of this Brāhmaṇa. This pronunciation was prescribed during the recitation of certain verses on the fourth day of the Navarātra Ceremony A single vowel was to be repeated sixteen times in varied quantity and accent. Thus the final *o* of *ắpo* in *ắpo revátīḥ kṣáyathā* was (1) first pronounced with a quantity of three moras and the high tone: ó3; (2) then five times as a *short* unaccented vowel—half o or ŏ; (3) again like (1), i.e. ó3; (4) again five times like (2). i.e. ŏ; (5) like (1), i.e. ó3; (6) three times like (2), i.e. ŏ. So the final *o* of *ắpo* in this particular recitation was pronounced as follows: ó3 ŏŏŏŏŏ ó3 ŏŏŏŏŏ ó3 ŏŏŏ.

As regards the half-quantity of *o* in *ắpo*, cf. Patañjali, Mahābhāṣya[5] (ed. Kielhorn, 1880), pp. 22, 117.

These data indicate that the study of phonetics was still subservient to the needs of the liturgy, but the minuteness of the details

[1] IX. 2: *vāg ghy aindrī*. Cf. Taitt. S., VII. 4, 7. Burnell, " Aindra School of Grammarians," p. 3.

[2] XIII. 21: *vāg vai samudro na vāk kṣīyate.*

[3] XII. 13: *taṃ madhyamayā vācā śaṃsaty ātmānam eva tat saṃskurute.*

[4] VII. II. Cf. Sāyaṇa on Ait. Br., XXI. 3; Keith on Ibid., p. 226.

The commentator (Āś. Śrau. Sū., VII. 11) speaks of the half *o* here as "*alaukika*"—i.e., not used in current speech (*ardhaukāra-svarūpasyālaukikatvāt*).

[5] Patañjali states in this passage that the Sātyamugri and the Rāṇāyanīya schools of the Sāmaveda pronounced *e* and *o* as short, viz. of half-quantity. According to Patañjali, this pronunciation was the regulation of certain Prātiśākhyas (Pārṣada) or phonetic schools of the Sāma Veda only: " Neither in the world, nor in any other Veda, does there exist a half *e* or a half *o*." In other words, the shorter quantity of *e* and *o* was only dialectical (cf. the above footnote).

Nanu ca bhoś chandogānāṃ sātyamugri-rāṇāyanīyā ardham ekāram ardham okāraṃ cādhīyate "*sújāte e áśvasūnṛte*" (Sām. V., I. 5, 1, 4, 3), "*ádhvaryo o ádṛbhiḥ sutám*" (I. 6, 1, 2, 3), "*śukrám te e anyád yajatáṃ te e anyád*" (I. 1, 2, 3, 3), *iti, pārṣadakṛtir eṣā tatrabhavatām, naiva hi loke nānyasmin vede 'rdha ekaro 'rdha okāro 'sti.*

suggests that the interest for phonetics had reached a further stage of development.

This taste grew during the period of the Aitareya Āraṇyaka, which describes various sounds in terms of different objects in nature.

The following may be of interest:

1. It compares the consonants to the nights, and vowels to the days,[1] presumably owing to the superior perceptibility of the latter in normal speech.

2. Again, the consonants are compared to the body, the voice to the soul, and fricatives to the breath.[2] The comparison of the consonants to the body was apparently due to their inferior perceptibility, but the exclusion of breath from the soul of speech may appear to be primitive, unless it was an error of omission, as the Prātiśākhyas[3] include *both* breath and voice in the "sound-material" (*anupradāna*). Nevertheless, the Āraṇyaka does not neglect breath, for it connects it with the fricatives in which breath is prominent. It ascribes to breath a position inferior to voice, because the former is more tangible.

3. In another passage,[4] the plosives are said to be a form of the earth, the fricatives of the atmosphere, and the vowels of the firmament. Here the comparative solidity of plosives presumably called forth the analogy of the earth; the predominance of breath in the fricatives, that of the atmosphere; and the superior perceptibility of the vowels recalled the brightness of the firmament.

4. Again, in another passage,[5] the fricatives are compared to breath, plosives to the bones, vowels to the marrow, and semi-vowels to flesh and blood. The first two comparisons are evident, but the last two are obscure, for the vowels, being more perceptible, should have been compared to flesh and blood, and not to the marrow. Perhaps the analogy of "support," as in the "bones" corresponding to the plosives, is continued in these two comparisons: the marrow was possibly conceived of as being the "support" of flesh and blood, and consequently the vowel, being the basic sound in the Indian theory of syllabication, was compared to the marrow.

5. But another remarkable passage[6] indicates that phonetics had

[1] II. 2, 1. Cf. Keith *ad loc.*, whose translation has been consulted.
[2] Ibid., *op. cit.*
[3] Ṛg Prāt., XIII. 1; Taitt. Prāt., XXIII. 2.
[4] III. 2, 5.
[5] III. 2, 2.
[6] III. 1, 5. For this date cf. Keith, Ibid., p. 26.

reached a very advanced stage during this period (circa 800-700 B.C.) It gives us three theories of syllabication, in connection with the definition of Saṃhitā. The following definitions of Saṃhitā have been given:

(*a*) Saṃhitā was the interval between two syllables. This was rather indefinite, for it throws no light on the nature of the interval, and it suggests that the syllables in juxtaposition were independent unities. If this meaning was intended, it was a primitive theory of syllabication.

(*b*) Saṃhitā was the interval by which the accent or the quantity of two syllables was distinguished. This was a more satisfactory definition, owing to inclusion of accent and quantity, which play an important part in syllabication.

(*c*) Saṃhitā is a pronunciation of two syllables which are neither entirely separated nor united. This indicates a view of syllabication which will be generally accepted by modern science. For the basic principle of syllabic division is relative, the *hearer* perceiving a break in the chain of prominence in connected speech. What may be the end of a syllable to the perception of one hearer may be the continuity of the syllable to another hearer, though all hearers may be agreed as to where occur very prominent breaks in the chain of speech.

These observations, then, indicate how far advanced was the study of phonetics in India as early as 700 B.C.

NATURE AND SCOPE OF "ŚIKṢĀ."

But the Aitareya Āraṇyaka does not give any designation for phonetics, the specific term for which has been "śikṣā," and four stages in the development of its scope may be mentioned:

1. Originally, the term seems to have been restricted to rudimentary instruction in pronunciation, as the literal meaning of the word implies. This scope is first mentioned in the Taitt. Upaniṣad,[1] and included instruction in individual sounds, accent, quantity, and chanting of Vedic verses. This sense of the term has been pointed out by various commentators such as Viṣṇumitra,[2] Sāyaṇa,[3] and Madhusūdana Sarasvatī.[4]

[1] I. 2.

[2] Ṛg Prāt. (Benares Edition), p. 10: *śikṣā svaravarṇopadeśakaṃ śāstram.*

[3] Max. Müller, "Hist. of Anc. Skr. Litt.," p. 113.

[4] Prasthānabheda, p. 16 (Weber's Edition). Cf. Weber *ad loc.*

2. In the next stage the scope of "śikṣā" was further developed into "general phonetics." We find the term used in this sense in the Vāj. Prāt.,[1] which speaks of the sounds "prescribed by the śikṣā," and further specifies those sounds as treated in the Vāj. school. As will be presently shown, "śikṣā" implied "general phonetics," while "*prātiśākhya*" signified "applied phonetics." In the second stage, then, *śikṣā* emerged from a schoolmaster's vocation to those general principles of phonetics which were further applied by the Prātiśākhyas to the various Vedic texts with which they were concerned. It is a significant fact that Pāṇini's list of Kramādigaṇa,[2] which enumerates five subjects, keeps "śikṣā" apart from "krama" and "pada," which therefore, were beyond the scope of Śikṣā proper.

The important question now arises, whether we can at present identify any śikṣā text or texts which offered to the Prātiśākhyas the general principles of phonetics. The answer is No! so far as the Śikṣās, as we find them in their present form, are concerned. Tradition ascribes the position of the Vedāṅga to the Pāṇinīya Śikṣā. Thus Madhusūdana Sarasvatī states[3] that the Śikṣā common to all the Vedas is the one propounded by Pāṇini in five sections, beginning with the words "*atha śikṣāṃ pravakṣyāmi*," etc., while Rāmakṛṣṇa[4] in his introduction to Pāraskara Gṛhya Sūtra speaks of this Śikṣā as the "basic Śāstra"—*mūlāgama*.

There are indications, however, that the Pāṇ. Śik. was not the Śikṣā to which the Vāj. Prāt. refers:

(*a*) Tradition ascribes the authorship of the Pāṇ. Sik., not to Pāṇini, but to Piṅgala, who was said to be "younger brother" to Pāṇini. Thus the opening verse of the Śikṣāprakāśa. a commentary on the Pāṇ. Śik., says: "After expounding the Sūtras of Piṅgala, I shall explain his Śikṣā, which follows the opinion of Pāṇini," and then speaks of Piṅgala as "being directed by his elder brother (Pāṇini), and as being his follower in grammar."[5] Now if Piṅgala's authorship of the

[1] *atha śikṣāvihitāḥ*, I. 29 (Weber's Edition).

[2] On Pāṇ., IV. 2, 61: (1) *krama*, (2) *pada*, (3) *śikṣā*, (4) *mīmāṃsā*, (5) *sāman*. Cf. St. Petersburg Lexicon.

[3] Prasthānabheda, p. 16.

[4] Page 42 (ed. Simon), *tathā ca mūlāgame: "śikṣā ghrāṇaṃ tu vedasya,"* etc.—a verse which occurs in Pāṇ. Śik., ŚS, p. 372.

[5] ŚS, p. 385: *Vyākhyāya piṅgalācārya-sūtrāṇy ādau yathāyatham, śikṣāṃ tadīyāṃ vyākhyāsye pāṇinīyānusāriṇīṃ, jyeṣṭha-bhrātṛbhir vihito vyākaraṇe 'nujanus tatrabhagavān piṅgalācāryaḥ*. Ṣaḍguruśiṣya also speaks of Piṅgala as younger brother of Pāṇini (Weber, "Ind. Stud.," VIII. 160).

Śikṣā be accepted—and there is nothing against the acceptance of the tradition—it is hardly likely that he lived earlier even than the Prātiśākhyas. For, firstly, his copious treatment of classical metre indicates that he did not precede the Prātiśākhyas; and, secondly, the kernel of at least some of the Prātiśākhyas being probably ante-Pāṇineyan (see p. 22), and Piṅgala being admittedly post-Pāṇineyan, his date could not be earlier than the Prātiśākhyas. Tradition is therefore unable to substantiate the fact that the Pāṇ. Śik. offered to the Prātiśākhyas the principles of general phonetics. Nor are there any positive grounds for the supposition that the *substance* of this Śikṣā may have preceded the Prātiśākhyas, for the same substance is common to several other Śikṣās as well, e.g. the Yājñ. Śik., the Nārada Śik., the Māṇḍū. Śik., and the Pār. Śik. The only positive assumption for which there is considerable probability is that the substance common to these Śikṣās may have formed the original text in question

(*b*) But we have also interesting internal evidence indicating that the Pāṇ. Śik. was not the prototype of the Prātiśākhyas. This internal evidence is that relating to the pronunciation of *r*, *ṛ*, and *ḷ*.

As regards *r*, all the Prātiśākhyas state that its place of origin is either the teeth, the roots of the teeth, or the teeth-ridge, as the following details will show:

Ṛg Prāt.[1]: Roots of the teeth: or, according to some authorities, the teeth-ridge.

Vāj. Prāt.[2]: Roots of the teeth

Atharv. Prāt.[3]: Roots of the teeth, or a point close to the teeth.

Taitt. Prāt.[4]: The middle of the front of the tongue touches a point close to the teeth. The Vaidikābharaṇa[5] thus explains the designation of *r* as *repha*: "it is called *repha* because it is pronounced like the sound of tearing ('ripping') a piece of cloth." In other words, it was a rolled sound, and was therefore observed as a dental.

Ṛkt.[6]: The teeth or the roots of the teeth

[1] I. 19, 20. Cf. Max Müller *ad loc.*
[2] I. 68.
[3] I. 28 and commentary. Cf. Whitney *ad loc.*
[4] II. 41.
[5] On Taitt. Prāt., I. 19: *riphyate vipāṭyate vastrādipāṭana-dhvanivad uccāryata iti rephaḥ.*
[6] 8: *repho mūle vā* (com.: *rephas tu dantyo dantamūle vā*).

We see, then, that according to all the Prātiśākhyas *r* was either dental or alveolar; but according to the Pāṇ. Śik. it was cerebral.[1]

Somewhat similar difference may be noticed regarding the pronunciation of *ṛ* and *ḷ*:

Ṛg Prāt.[2]: Both *ṛ* and *ḷ* velar (*jihvāmūlīya*)—their place of origin being the root of the tongue.
Vāj. Prāt.[3]: *ṛ* velar; *ḷ* dental.
Atharv. Prāt.[4]: According to the commentary, both *ṛ* and *ḷ* velar.
Taitt. Prāt.[5]: Both *ṛ* and *ḷ* alveolar.
Ṛkt.[6]: *ṛ* velar; *ḷ* not located.

We see, then, that none of the Prātiśākhyas speaks of *ṛ* as being cerebral, which the Pāṇ. Śik.[7] maintains. As regards *ḷ*, the older and perhaps more correct opinion is expressed by the Ṛg and the Atharv. Prātiśākhyas, for they maintain it to be velar. But the Pāṇ. Śik. holds it to be dental.[8] Moreover, it seems that this difference between the articulation of *ṛ* and *ḷ*, as maintained by the Pāṇ. Śik., was not held by the older grammarians of the Pāṇineyan school. For, commenting on Pāṇ. I. 1, 9, both Kātyāyana and Patañjali[9] point out that a similarity between the articulation of *ṛ* and *ḷ* ought to have been laid down by Pāṇini in order that, as Patañjali illustrates it, the lengthening of *ṛ* or *ḷ* in the combination of *hotṛ* + *ḷkāraḥ* = *hotṝkāraḥ* or *hotḹkāraḥ* may be effected. It seems, then, that these grammarians followed the opinion of the Ṛg and the Atharv. Prātiśākhyas, according to which both *ṛ* and *ḷ* were velar sounds. The much later[10] grammarian Bhaṭṭoji Dīkṣita slavishly records both the views side by side—viz., of Kātyāyana and of the Pāṇ. Śik.—without noticing the contradiction[11] involved.

1 *syur mūrdhanyā ṛturaṣāḥ*, ŚS, p. 379. Cf. Whitney *ad loc.*, Atharv. Prāt., Taitt. Prāt.

2 I. 18.
3 I. 65, I. 69.
4 I. 26. Cf. Whitney *ad loc.*
5 II. 18.
6 4: *jihvāmūle* x *kṛ*.

7 *syur mūrdhanyā ṛturaṣāḥ*, ŚS, p. 379.

8 *dantyā ḷtulasā smṛtāḥ*, Ibid., p. 379.

9 Kāt.—*ṛkāraḷkārayoḥ savarṇavidhiḥ*: Pat. *kiṃ prayojanam? akaḥ savarṇe dīrgho yathā syāt.*

10 His date, according to Belvalkar ("Systems of Skr. Grammar," pp. 46-47), is 1630 A.D.

11 On Pāṇ. I. 1, 9: *ṛḷvarṇayor mithaḥ sāvarṇyaṃ vācyam*, and *ṛturaṣāṇām mūrdhā ḷtulasānāṃ dantāḥ*.

There are, however three Śikṣās which prescribe the pronunciation of *r*, *ṛ* and *ḷ* as maintained by the Prātiśākhyas. These are the Vyāsa[1] Śik., the Yājñ. Śik.,[2] and the Varṇ. Śik.[3] Now the Vyāsa Śik. does not seem to have been the prototype of the Prātiśākhyas, as it admittedly[4] follows the Taitt. Prāt. The Yājñ. Śik., in prescribing this pronunciation, actually quotes Vāj. Prāt. I. 65. The Varṇ. Śik.[5] seems to be a compilation, as a subsequent discussion will show.

Of the Śikṣās which prescribe the pronunciation in question in accordance with the view of the Pāṇ. Śik. are the Āpiśali[6] and the Cār.[7] Śikṣās. Now the Pāṇ. Śik. mentions the country of Surāṣṭra,[8] corresponding to modern southern Gujrat, and at first sight it might appear as if the pronunciation in question of *r*, etc., was current in this part of the country, or somewhere in the adjoining territories. But this illusion vanishes when we note that the Yājñ. Śik.[9] also, which prescribes the opposite pronunciation, gives a similar verse regarding Surāṣṭra. The earliest available record of the cerebral pronunciation of *ṛ* and *r* may be noticed in the Varṇa-Sūtra of Candragomin,[10] the lower limit of whose date, according to Liebich, was the seventh century A.D.[11] It is possible that the later grammarians of the Pāṇineyan school and some of the Śikṣās borrowed this opinion from Candragomin, whose work exercised considerable influence on the later development of Indian grammatical literature. That both the dental and cerebral pronunciations of *r* and *ṛ* were actually current in certain areas of the country cannot be doubted. For corresponding to Sanskrit groups *r* + *t* we have in some dialects *tt* and in others *ṭṭ*, while corresponding to Skr. *ṛ* + *t* we have in western dialects *i*, *u* + *t*, in southern dialects *a* + *t*, and in eastern *aṭ*. Thus in eastern Aśokan inscriptions

[1] XXIV. 13, 14: *madhyāntābhyāṃ ca tālau ye rephe jihvāgramadhyataḥ, takāre dantamūleṣu jihvāgreṇopari spṛśet.*

[2] ŚS, p. 33: *aṣṭau dantyā ḷvarṇa-lakāra-sakāra-tavargā iti, eko dantamūlīyo rephaḥ, pañca jihvāmūlīyā ṛχkkau* (Vāj. Prāt., I. 65) *kavarga iti.*

[3] ŚS, p. 119: *ṛvarṇo 'tha kavargaś ca jihvāmūlīya eva ca*, etc.

[4] Lüders, Vyāsa Śik., p. 4 ff.

[5] See p. 34.

[6] 21: *ṛṭuraṣā mūrdhanyāḥ.*

[7] Fol. 2: *mūrdhanyṛṭuraṣā jñeyā dantyā ḷtulasāḥ smṛtāḥ.*

[8] ŚS, p. 380: *yathā saurāṣṭrikā nārī takrā̃ ity abhibhāṣate.* Cf. V. Smith, "Early History of India" (1924), p. 342.

[9] ŚS, p. 27: also Nārada Ś., p. 435; Māṇḍū Ś., p. 473.

[10] *Candra-Vṛtti* (edited Liebich), p. 515, Sūtra 6: *mūrdhā ṛṭuraṣāṇām.*

[11] "Das Datum Candragomin's und Kālidāsa's," Breslau, 1903, p. 11.

and in Singhalese we have *vaṭṭati vaṭanu* for Skr. *vartta-* (cf. Modern Bihari *bāṭe*, "he is"), but in West Aśokan and some of the western Indian languages we have the dental group *tt*, e.g. *vattati*, Sindhi *watanu*.[1] It is not unlikely, therefore, that the Pāṇ. Śik. was composed in an area connected with the eastern group of Indian languages, but as no definite geographical data are available from the Śikṣāṣ, the matter is shrouded in uncertainty. At any rate, the above data seem to indicate that the Pāṇ. Śik. was not the prototype of the Prātiśākhyas.

The Pāṇ. Śik. in a more concise form occurs in the Agni Purāṇa,[2] which, according to Wilson,[3] was composed a little before the Muslim invasion of India. It has only twenty-two verses, while Pāṇini's name is not even mentioned therein. The Śikṣā as published in Benares edition has sixty verses, and the beginning as well as the end refers to Pāṇini.[4] It is possible, then, that the Pāṇ. Śik. in its present form was composed later than the Muslim invasion, and was adopted by the more recent grammarians of the Pāṇineyan school. But the earlier grammarians of this school hardly give any definite indications that they followed this Śikṣā only. On the other hand, Kaiyyaṭa's reference to the eleven kinds of accessory movement[5] in articulation indicates that he did not have the Pāṇ. Śik. in his mind, but possibly the Āpiśali Ś. For the Pāṇ. Śik.,[6] like the Taitt. Prāt.,[7] classifies sounds on five principles—viz., accent, quantity, place of origin, effort (*prayatna*) and sound-material. But Kaiyyaṭa mentions eleven kinds of accessory movement (*bāhya-prayatna*) alone, which include, among others, breath, voice, closure, opening, and the three accents.[8] Thus while the Śikṣā considers accent, breath-voice material (*anupradāna*) and articulatory movement as three different categories, Kaiyyaṭa brings these under "external *prayatna*"—a very unsatisfactory

[1] I owe the above data to Professor R. L. Turner.

[2] Poona Edition, chapter 336. Cf. Weber, "Ind. Stud.," Vol. IV.; Pāṇinīya Śik: *ad loc.*

[3] JRAS, VI. 483.

[4] ŚS, pp. 379, 383.

[5] On Pāṇ. I. 1, 9: *tatra pūrvaṃ spṛṣṭādayaḥ catvāraḥ, paścān mūrdhani pratihate nivṛtte prāṇākhye vāyau vivārādayo bāhyā ekādaśa prayatnā utpadyante.*

[6] ŚS, p. 379: *svarataḥ kālataḥ sthānāt prayatnānupradānataḥ.*

[7] XXIII. 2. The Taitt. Prāt.'s classification is slightly different: instead of accent it mentions closure (*saṃsarga*).

[8] Siddh. Kaumudi on Pāṇ. I. 1, 9: *vivāraḥ saṃvāraḥ śvāso nādo ghoṣo 'ghoṣo 'lpaprāṇo mahāprāṇa udātto' nudāttaḥ svaritaś ceti.*

treatment indeed. Now this classification of external prayatna—attributed to organs other than the main articulating organs, the tongue, the lips, etc.—is given in the Āpiśali Ś.,[1] and as Āpiśali is traditionally said to be older than Pāṇini (see p. 44), Kaiyyaṭa may have had this Śikṣā in his mind when he referred to the eleven kinds of external "effort."

3. In the above paragraphs we have considered the second stage in the development of the Śikṣā when it offered to the Prātiśākhyas the principles of general phonetics. But it should not be supposed that with the advent of the Prātiśākhyas the observation of the general principles of phonetics was stopped. On the other hand, the Prātiśākhyas seem to have further stimulated the interest for phonetics, and hence, side by side with the rigorous details of the Prātiśākhyas which were called forth by the need for strict accuracy in the pronunciation of Vedic texts, there developed a minute observation of phonetic phenomena in their pronunciation of Sanskrit. The Śikṣās, as they exist in their present form, are not mere summaries of the Prātiśākhyas. Many of them, as will be shown, can claim a number of distinct contributions to phonetics. A few of these contributions, rarely to be met with in the Prātiśākhyas, may be mentioned:

A. Minute details regarding the general conditions of correct pronunciation.

According to the Yājñ. Ś. these are:

(*a*) Sound health; (*b*) calm temperament; (*c*) freedom from nervous-

[1] 32: *kālo vivāraḥ saṃvāraḥ śvāsa-nādāv aghoṣatā ghoṣo 'lpaprāṇa-kālaś ca mahāprāṇa-svarās trayaḥ bāhyaṃ karaṇam āhus tān varṇānāṃ varṇa-vedinaḥ*. This would give twelve kinds of external prayatna, for they include quantity (*kāla*) also. Perhaps Kaiyyaṭa further reduced it to eleven, or had another recension of the Śikṣā before him.

This "bāhya-prayatna" has also been mentioned by Candragomin (*Candravṛtti*, p. 516), but he gives only four kinds thereof—viz., *vivṛtaṃ*, *saṃvṛta*, *śvāsa*, and *nāda*. This classification possibly offered material to the Pāṇ. Śik. The eleven kinds of "bāhya-prayatna," however, are mentioned by Jinendrabuddhi in his Nyāsa (ed. S. C. Cakravarti, p. 56), whose date has been assigned to the eighth century A.D. (Belvalkar, "Systems of Sanskrit Grammar," p. 38). His phraseology on this point (cf., e.g., *sa eva prāṇo nāma vāyur ūrdhvam ākraman mūrdhani pratihato yadā koṣṭham abhihanti*, etc., p. 56) somewhat resembles Kaiyyaṭa's (cf. footnote on p. 9), and Kaiyyaṭa seems to have followed it. But whether Jinendrabuddhi borrowed the idea (of these eleven kinds of external effort) from the Āpiśali Śikṣā or from some other source is a matter for further investigation.

ness; (*d*) abstention from omission of sounds, overstress, singsong and faltering tone; (*e*) beginning and end of the speech to be consistently distinct; (*f*) abstention from habits of roughness, projecting the lips, indistinct pronunciation, nasal twang, broken speech, and rigidity of the tongue; (*g*) good teeth and lips.[1] Among other essentials the Nārada Ś. mentions a clear throat, and recommends, on the authority of Audbraji, the cleaning of the teeth and the throat with a twig-brush (*danta-dhāvana*).[2]

B. Minute details regarding the relation of the vowel and the consonant (see Chapter I.). But for the data from the Śikṣās, this point would have remained much more obscure. It is important to note that for the explanation of all such subtle points the commentators on the Prātiśākhyas rely upon the Śikṣās, which have thus proved guiding lights for advanced phonetics in India.

C. The nature of accent. While the Prātiśākhyas are rather obscure, the Śikṣās throw definite light on the nature of Vedic accent. Thus the Yājñ. Śik.[3] directly tells us that the Vedic accent was musical: "the seven musical notes mentioned in the science of music are exactly the three accents, udātta, etc., in the Vedas."

The Śikṣās also give interesting observations on the teaching of accent, and the relation of accent and quantity (see Chapter X.).

D. Quantity. Several remarkable observations of the Śikṣās in this connection will be examined in Chapter XI.

E. Svarabhakti as an independent syllable after the Svarita accent (see pp. 84-87).

F. The nature and quantity of Anusvāra and Raṅga (Chapter IX.).

G. Further development of observations on Abhinidhāna, consonant-groups, and doubling (Chapters VIII. and V.).

[1] ŚS, pp. 3-4:

svasthaḥ praśānto nirbhīto varṇān uccared budhaḥ
nābhyāhanyān na nirhanyān na gāyen na ca kampayet.
yathādāv uccared varṇān tathaivaitān samāpayet.
. . . .
na karālo na lamboṣṭho nāvyakto nānunāsikaḥ
gadgado baddhajihvaś ca na varṇān vaktum arhati.
prakṛtir yasya kalyāṇī dantoṣṭhau yasya śobhanau
pragalbhaś ca vinītaś ca sa varṇān vaktum arhati.

[2] ŚS, p. 443.

[3] ŚS, p. 1: *gāndharva-vede ye proktāḥ sapta ṣaḍjādayaḥ svarāḥ, ta eva vede vijñeyās traya uccādayaḥ svarāḥ.*

4. The fourth scope of the term Śikṣā, not necessarily developed in a chronological order, was its identification with the treatises on applied phonetics—viz., the Prātiśākhyas. Thus Viṣṇumitra[1] speaks of the Ṛg Prāt. as a Śikṣā Śāstra composed by Śaunaka, while the Ṛg Prāt.[2] speaks of itself as a Śikṣā of Sounds. It should be borne in mind that a hard-and-fast line between Śikṣā and Prātiśākhya was not possible. The authors of the Prātiśākhyas were themselves authorities on phonetics, and their minute observations on syllabication, accentuation, etc., are distinct contributions to general phonetics. There was, therefore, a close interaction between Śikṣā and Prātiśākhya, leading to the advancement of both. But when the term Śikṣā was applied to the Prātiśākhya, it was done so in a *secondary* sense, as our next discussion will show.

THE NATURE AND SCOPE OF THE PRĀTIŚĀKHYAS.

The original, and perhaps more significant, term for the Prātiśākhya was the Pārṣada, and the commentators[3] sometimes speak of the Ṛg Prāt. as a Pārṣada. This name was said to signify that the treatise in question belonged to a social group (*pariṣad*) or groups in which, among other things, the general principles of phonetics were adapted to Vedic texts, by *oral* instruction or public discussion. The term Pārṣada indicates that for a long time these *phonetic* treatises were not put in writing. Hence the kernel of these works dates back considerably earlier than Yāska[4] (circa 500 B.C.), who mentions them.

The term Prātiśākhya has been etymologically explained by Mādhava[5] as a treatise "belonging to each individual (*prati*) branch or school (*śākhā*)." This derivation, however, is not satisfactory; for it might suggest the existence of as many Prātiśākhyas as there were schools in the Vedas, and for this we have no evidence. The Vaidikā-

[1] Ṛg Prāt. (Benares Edition), p. 10: *atha ācāryo bhagavān śaunakaḥ . . . śikṣāśāstram kṛtavān.*

[2] XIV. 30:

> . . . *nindanty akṛtsneti ca varṇa-śikṣām*
> . . . *kṛtsnaṃ ca vedāṅgam anindyam ārṣam.*

[3] E.g. Viṣṇumitra, Ṛg Prāt. (Benares), pp. 1, 10.

[4] 1-17. Cf. Roth's remarks *ad loc.* in his introduction, and "Zur Litt. und Gesch. d. Vedas," pp. 13 ff.

[5] Jñānendra Sarasvatī on the Siddhānta Kaumudī Pāṇ., IV. 3, 59: *pratiśākhaṃ bhavaṃ prātiśākhyam . . . iti mādhavaḥ.*

bharaṇa[1] gives the more probable suggestion that the "Prātiśākhya" referred to a group of Śākhās, "just as the Ṛg Prāt. pertains both to the Śākala and the Bāṣkala Śākhās." The Vaidikābharaṇa stoutly combats the view that the examples quoted by the Taitt. Prāt., but not available in the extant texts of the Taitt. Saṃhitā, refer to the Jaṭā Pāṭha. These examples, it maintains, "belong to other (extinct) Śākhās of the Saṃhitā."[2] The Prātiśākhya, then, was a treatise on phonetics applied to a group of schools of a particular Veda.

The basis of the Prātiśākhya, according to the Vaidikābharaṇa[3] and Uvaṭa,[4] was Śikṣā *and* grammar. Concerning its relation to Śikṣā, Uvaṭa points out that "sounds of the alphabet are taught in the world; the Ṛg Prāt. *selects* only those sounds of this alphabet which pertain to its own Śākhā."[5] The Vaidikābharaṇa[6] throws further light on the point by stating that the "sounds enumerated in the Śikṣās are common to secular and Vedic pronunciation; thus some Śikṣās mention sixty-eight sounds and others sixty-four sounds, the Prātiśākhyas specify the sounds peculiar to their Vedic texts." Again, as Uvaṭa[7] says, "In one Śikṣā *r* is said to be cerebral, and in another dental. The Śikṣās thus prescribe rules of pronunciation common to all the Śākhās, but do not specify in which Śākhās *r* is cerebral and in which it is dental. Now it is this specification which is made in the Prātiśākhya." Unfortunately the Prātiśākhyas do not help us to determine where to locate the cerebral pronunciation of *r*, for all of them prescribe it to be dental or alveolar. Nevertheless, it will now be clear that the Prātiśākhyas presuppose a Śikṣā or Śikṣās of a general character. This is further corroborated by the fact that the Prātiśākhyas do not actually enumerate the sounds of the alphabet, as Pāṇini does. Thus the Taitt.

1 On Taitt. Prāt., IV. 11: *dvi-tri-śākhā-viṣayatve 'pi tad-asādhāraṇatayopapatteḥ, tathā bahvṛcānāṃ śākala-bāṣkalakātmaka-śākhā-dvaya-viṣayaṃ prātiśākhyaṃ prasiddham.*

2 Ibid., *op. cit.* Cf. Whitney, Taitt. Prāt., pp. 184, 185.

3 On Taitt. Prāt., I. 21: *śikṣā-vyākaraṇānāṃ yad ayaṃ vivaraṇātmakaḥ, granthas tato 'tra nātīva śabda-saṅkoca iṣyate.*

4 On Vāj. Prāt., I. 169: *śikṣā-vihitaṃ vyākaraṇa-vihitaṃ cāsmin śāstra ubhayaṃ yataḥ prakriyate. . . .*

5 Ṛg Prāt. (Benares), p. 21: *upadiṣṭo varṇa-samāmnāyo laukiko vidyate, tatra yāvanto varṇā asyāṃ śākhāyām upayokṣyante . . .*, etc.

6 On Taitt. Prāt., I. 1: *evaṃ śikṣāsv api kvacit kvacil lokaveda-sādhāraṇā upadeśā bhavanti "aṣṭaṣaṣṭiṃ paṭhanty eke catuḥṣaṣṭim athāpare."*

7 On Ṛg Prāt. (Benares, p. 17). Cf. Max Müller *ad loc.*

Prāt.[1] describes the sounds in this manner: "Now the first nine are simple vowels"; similarly the Ṛg Prāt.[2]: "In the beginning there are eight simple vowels," without specifying what those vowels are. The pre-existence of a Śikṣa also seems to be confirmed by the observation of the Atharv. Prāt.[3] that "the origin of accent is not seen in the Pada or the Saṃhitā texts." As the relation of the Pada and the Saṃhitā texts was the main scope of the Prātiśākhyas, the Atharv. Prāt. probably refers here to those wider principles of accentuation which were embodied in the Śikṣas.

To sum up, then, the scope of the Prātiśākhya was the specification and adaptation of sounds, prescribed by the Śiksā. When, therefore, the term Śikṣā was used for the Prātiśākhya, it was so employed in a *secondary* sense.

But now comes a somewhat surprising point. It is the abovementioned observation of the Vaidikābharaṇa and Uvaṭa that the Prātiśākhyas were based on *grammar* as well. In fact, the Vaidikābharaṇa goes even further, and states that the Prātiśākhya was *predominantly* grammatical. The reasons given by the Vaidikābharaṇa are the following: (1) The Taitt. Prāt. sums up the items of general phonetics (quantity, accent, breath, voice, syllabication) at the end (in XXIV. 5), *after* the work is over. This indicates, says our commentator,[4] that the work is not so much based on the Śikṣā. (2) It is based more upon grammar, for the Taitt. Prāt., referring to its "predecessors," says that in their opinion all syllables should be pronounced in a monotone. Now by "predecessors," says the Vaidikābharaṇa, "is meant the grammarians who composed the basis (viz., grammar) of this Śāstra, i.e., the Prātiśākhya. For it is grammarians who prescribe optional monotone in the recitation of Vedic verses (cf. Pāṇini I. 2, 34)."[5] (3) The Taitt. Prāt. in another Sūtra[6] states that the *kampa* accent is not prescribed by the preceding Śāstra.

[1] I. 2: *atha navāditaḥ samānākṣarāṇi.*

[2] I. 1: *aṣṭau samānākṣarāṇy āditaḥ.*

[3] IV. 109.

[4] *śikṣā-gaṇopadiṣṭaṃ tu kāryaṃ nātra saṃgṛhītam, vyākaraṇa-pradhānatvāt prātiśākhyasya.* On Taitt. Prāt., XXIV. 4; also on XIX. 5.

[5] On Taitt. Prāt., XV. 9: *ekaśruti-svareṇa prayoktavyam iti pūrveṣāṃ matam, pūrve vaiyākaraṇāḥ, etac chāstrasya mūlabhūtaṃ vyākaraṇaṃ kṛtavanto hi te.*

[6] On Taitt. Prāt., XIX. 5: *asya śāstrasya mūlabhūtaṃ vyākaraṇaṃ pūrvaśāstram ity ucyate. 'asmin kampo na vidhīyate, sāksāci chiksāyāṃ tu vidhīyate.*

Now by "the preceding Sāstra is meant grammar, by which *kampa* is not prescribed. In Śikṣā, however, it has been directly prescribed."

The arguments of the Vaidikābharaṇa, however, do not seem to be adequate, for the mere use of "predecessors" does not prove that it necessarily referred to grammarians. There is no doubt that the data regarding the monotone and *kampa* are true of the grammarians of the Pāṇineyan school; but this may have been a mere coincidence.

Nevertheless, it is an important observation; for it reveals the weakness of Goldstücker's opinion that the Prātiśākhyas were entirely different from grammar, and that to treat them as grammar was a fallacy.[1] Goldstücker's main argument seems to be that tradition never considered them to be grammar; while here we have the authority of Uvaṭa and the author of the Vaidikābharaṇa, who relate them to grammar. Moreover, there is no doubt that the Prātiśākhyas take the ready-made word as the base; but, as Benfey[2] has rightly pointed out, it was the grammatical form of words which constituted the basis for the phonetic observations of the Ṛg Prāt., and, as he adds, the Prātiśākhyas are based on grammar of a very advanced stage. Again, the observation of the two commentators is further corroborated by the very first Sūtra of the Atharva Prāt.,[3] which throws light on the basis of a Prātiśākhya. It says: "The object (of this treatise is to describe) the characteristic features of the four parts of speech—viz., the noun, the verb, the prefix, and the particle—in the Pada and the Saṃhitā Pāṭha." And although this statement betrays the influence of a later stage in grammatical studies, it is a well-known fact that the Prātiśākhyas take the Pada Pāṭha as their basis. Had their foundation been only Śikṣā, they would have treated only individual sounds in relation to the Saṃhitā Pāṭha. But as they start from *words* in their strictly grammatical form—i.e., including the suffix and the termination—their basis was partly, though not entirely, grammatical. Whitney[4] is therefore not right when he says that the Atharv. Prāt.'s mention of the four parts of speech was not relevant But the Vaidikābharaṇa also stumbles into extremes by stating that the Prātiśākhyas are

[1] "Pāṇini: His Place in Skr. Litt.," pp. 195-197.

[2] *Gött. Gel. Anz.*, 1859, 102, 103; pp. 1011, 1012.

[3] I. 1.

[4] On Atharva Prāt., I. 1. Whitney is more accurate in another passage (Ibid., p. 579) when he says that "the Prātiśākhyas are no complete grammatical treatises"

predominantly grammatical. For they handle grammatical problems only incidentally,[1] although, being partly based on and closely related to grammar, they gradually began to incorporate into themselves grammatical subjects.[2]

The Object of the Present Treatise.

In the above pages we have traced the general trend of phonetic studies in India, with special reference to the leading features of the specific literature on the subject. As regards the title of the work, "Critical Studies in the Phonetic Observations of Indian Grammarians," the word "grammarians" is taken in a wider sense including works on grammar proper (such as Pāṇini's) and on phonetics.

The primary object of the present treatise is a critical and connected study in the phonetic observations of Indian grammarians. But its secondary object is also to show—

1. That the phonetic views of Indian grammarians were not fanciful speculations, but on the whole, sound and accurate observations.
2. That the language which they dealt with was not a grammarian's language, as Benfey and Whitney supposed,[3] but a living language.
3. That this language, spoken by the educated classes,[4] was not a merely religious or imperial language 'superposed' upon the people, but rather a secondary language used by the educated classes, both for literature and conversation, general as well as technical.
4. That the accuracy of our grammarians' observations regarding the pronunciation of Sanskrit as defined in the above paragraph is generally corroborated by (*a*) the phonetic structure of Skr., particularly Sandhi; (*b*) the evidence of inscriptions; (*c*) parallel phenomena in the living dialects; and (*d*) the principles of linguistics.
5. That, therefore, the Prātiśākhyas were not "dead Prātiśākhyas" composed for "priests who had to be drilled into a proper recital of the sacred texts," and do not indicate "a time of degeneration

[1] Max Müller, "Hist. of Anc. Skr. Litt.," p. 120.
[2] Weber, "Ind. Stud.," IV. 76 ff.; Lüders, Vyāsa Śik., pp. 102-3.
[3] Liebich, "Pāṇini," p. 44.
[4] "Hochindisch," as Liebich calls it (Ibid., p. 48).

after Paṇini," as Goldstücker[1] supposes, but manifest a thrilling interest in the living phenomena of the language.

6. That our grammarians show not only accurate observation generally, but have also observed some of the most important phonetic facts of Indo-Aryan languages, some of which may be helpful to modern philology (cf. p. 19).
7. That if the *morphology* of the language dealt with by Pāṇini was that of a living language, as Liebich[2] has shown it from the evidence of grammatical structure, its *phonology*, as handled by Pāṇini and the Prātiśākhyas also referred to a living language.

As regards the plan of the present treatise, it follows the recent methods of comparative philology. Thus if the phonology or the morphology of a standard dead language as noticed by its grammarians was actual, it should be not only confirmed by a copious number of occurrences in its structure, but must be reflected in the living dialects. The method followed, then, is twofold—direct and indirect. The former resorts to Skr. inscriptions, MSS., etc. The latter is "dialectal," which has no doubt its limitations, especially when the opinions of grammarians are to be considered. For, firstly, some of the "living dialects" are also now dead languages, so that the actuality of their forms should be further corroborated by the parallel forms in the modern languages—an infinitely vast work; and, secondly, whenever grammarians step in, they tend to obscure the natural history of a standard language. Vendryes[3] aptly compares them to "the cold which produces the ice that restrains the flood of a stream." For the grammarians' motive is to guard the language against provincialism; and it may then be expected that the pronunciation prescribed by them would be different from the living dialects. But these drawbacks may be counterbalanced by some advantages. As regards the first, the task is facilitated by the results already established by the philology of modern dialects; and as regards the second, our grammarians have

1 The remarks of this close scholar of Skr. grammarians on the Prātiśākhyas are so astounding, that they may be quoted here more fully (Ibid., p. 198):

"In the Prātiśākhyas there is mechanism and death . . . linguistic death reigns in these Sūtras" . . . 'they (i.e., the priests) had none of the spirit, learning and intelligence which Patañjali would wish" . . . ". . . between Pāṇini's living grammar and these dead Prātiśākhyas there lies a space of time sufficient to create a want." . . .

2 Ibid., pp. 48 ff.

3 "Language," p. 276.

fortunately observed important facts of the language which could not but be reflected in the dialects, and they have also given us minute details on mispronunciation of Sanskrit, which betray the actual dialectical tendencies of the people.

The Plan of the Present Treatise.

The treatise consists of eleven chapters:

Chapters I.-IV.—The first four chapters deal with the syllabication of sound-groups. The reason for devoting so much space to this item is that a fundamental basis of linguistic change is the variation in the affinity of one sound for another. For, as Tucker[1] has pointed out, "in language proper single sounds are not articulated independently, but in combination with others. . . . Hence a change of one sound in such a breath-group may induce a change in another sound of that group, not because of any difficulty in regard to the latter sound in itself, but because in this particular conjunction it becomes less congenial than some other." It will be shown in these chapters that the leading features of syllabication observed by Indian grammarians have been a great fact in the history of the language—a fact[2] which distinguishes Indo-Aryan from Avestan. Chapter I. states the basic principle of syllabication; Chapter II. examines the detailed rules of syllabic division; Chapter III. states the general principles of syllabic quantity, with reasons for its separate treatment; and Chapter IV. examines the detailed rules of syllabic quantity.

Chapter V.—The main evidence for the accuracy of these rules on syllabication has been doubling, and so the opinions of our grammarians on doubling will be examined in Chapter V. It will be shown that, on the whole, the diversity of opinion was based on living facts. These new data would effect a solution of Whitney's difficulty when he remarked:

"Thus is brought to an end the tedious subject of duplication, the physical foundation of which is the obscurest, although the pains with which the Hindu *Śākhinaḥ* have elaborated it, and the earnestness with which they assert their discordant views respecting it, prove that it had for them a real, or what seemed like a real, value."[3]

[1] "Natural History of Language," p. 289.

[2] I owe this suggestion to a private communication from Professor Meillet.

[3] Taitt. Prāt., p. 313.

Chapter VI.—Another linguistic fact noted by them was the pronunciation of *y* and *v* in different positions, and this will be considered in Chapter VI.

Chapter VII.—An examination of some of the views on Svarạbhakti and their bearing on the dialects.

Chapter VIII.—But the grand fundamental basis of all the abovementioned views was Abhinidhāna, examined in Chapter VIII.

Chapter IX.—Another fact in Indo-Aryan languages has been nasalization. The nasalization of finals in Indian languages has been noticed by phoneticians from Śākalya[1] to Daniel Jones.[2] These nasal sounds will be described in Chapter IX., under the heading "Anusvāra." When anusvāra arose before a fricative, it was a case of abhinidhāna.

Chapter X.—Another important fact definitely pointed out by the Śikṣās was the musical nature of accent, dealt with in Chapter X.

Chapter XI.—But by far the most remarkable proof of our grammarians' accuracy is their description of quantity, examined in Chapter XI.

It has been hinted above that some of the phonetic suggestions of Indian grammarians may be helpful to modern linguistics. A few of these may be mentioned:

1. The short quantity of the anusvāra after a long vowel (see p. 187) will explain why some of the modern Indian vernaculars have long vowel without the anusvāra, corresponding to Skr. long vowel+anusvāra. Thus Nepālī, Panjabi have *mās*, Siṇā *mos*, for Skr. *māṃsa-*, but after the original *short* vowel the anusvāra has been preserved, as in Panjabi *váñjh* for Skr. *vaṃśa-*.

2. The insertion of a plosive in the group fricative+nasal consonant (see p. 123) will explain modern Indian forms like *viṭṭhal* for Skr. *viṣṇu-*, *kiṭṭ* for *kṛṣṇa-*, and forms like *aphe, tuphe* (see p. 124) for Skr. *asmān, yuṣmān* occurring in Aśokan inscriptions.

3. The divergent treatment of Skr. plosive+nasal consonant may well be explained by the observations on the Yamas (see p. 80). Thus Pāli *paññā* for Skr. *prajñā*, but *soppā* for Skr. *svapna-*, may be explained on the ground that in some dialects there existed an actual tendency

[1] Ṛg Prāt., I. 26; Pāṇ., VIII. 4, 57.

[2] He tells me in a private communication that Indians have a general tendency to nasalize final vowels.

for strong nasality, the observation of which led some grammarians to the view that the Yamas belonged to the preceding syllable, while the opposite tendency, which led to the opposite view, also existed.

4. The divergent treatment of Skr *utsava-* as *ucchava-* in Māgadhī, but *ussava-* in Ardhamāgadhī, may be explained on the ground that in the former case (*ucchava-*) the doubling of semi-finals was either parallel to, or possibly the effect of, the academic pronunciation of Skr. —as, for instance, enjoined by the Cār. Śik. (see pp. 106, 109) that the final consonants in Sandhi were to be doubled.

Chronology of Indian Literature on Phonetics.

Chronology in this line, like Indian chronology in general, is extremely obscure, and nothing can be asserted with certainty. The question, in fact, is even more difficult than chronology in several other lines, because phonetics being *par excellence* a subject for *oral* instruction, any particular treatise may have been put into writing far later than the period of its actual propagation; and it is impossible to determine how many stages of development each treatise has undergone. The main arguments have been hitherto based on (1) grammatical terminology used by the treatises in question, (2) style, (3) authorities quoted. As regards the first point, Whitney[1] has rightly pointed out that the appearance in a Prātiśākhya of a later phase of grammatical phraseology is not a necessary evidence of its later composition, and he goes even so far as to say that discussions on this point are "nearly barren of any positive results." In order that the chronological data may have even a relative value, many more things than mere terminology or style have to be taken into account. Nevertheless, considering the fact that research in the chronology of authors like Kālidāsa and Bhāsa is being kept up, although they have said little about themselves, the following pages may perhaps throw more light on the subject, although they do not claim any positive results.

Chronology of the Prātiśākhyas.

A definite starting-point for the chronology of the Prātiśākhyas is the date of Patañjali, who admittedly[2] lived about 150 B.C. Now in

[1] Atharv. Prāt., p. 519.

[2] Liebich, "Materialien zum Dhātupāṭha," p. 59; Belvalkar, "Systems of Skr. Grammar," p. 32; Keith, "The Veda of the Black Yaj. School," CLXVIII.

Patañjali's Mahābhāṣya[1] I have discovered a passage from the Taitt. Prāt. on the definition of high and low accent. Patañjali not only cites the passage, he explains every term occurring therein, so that the passage cannot be his own composition, and considering the fact that he refers in another passage[2] to the Taittirīyas, it may be taken as very probable that he knew the Taitt. Prāt. The lower limit for the date of the Taitt. Prāt. may therefore be taken as 150 B.C.; while the upper limit for the kernel of Indian phonetic literature should go as far back as 800-700 B.C., the period of the Aitareya Āraṇyaka, which betrays a very advanced stage of phonetic study, as shown above; but the upper limit for the Prātiśākhyas proper was not earlier than Yāska, for the Ṛg Prāt., probably the oldest, quotes him.[3] The upper limit is therefore Yāska's date, 500 B.C.[4] As regards the extinct Śikṣā or Śikṣas which were the prototype of the Prātiśākhyas, they were very probably synchronous with the period of the Aitareya Āraṇyaka, if not earlier, because even Yāska[5] refers to phonetic literature under the name of Pārṣadas. The chronology of the earlier but extinct phonetic literature should therefore range between 800-500 B.C., while that of the Prātiśākhyas proper between 500-150 B.C.

As regards their relative chronological position, the Prātiśākhyas may be placed in the following order:

1. Ṛg Prāt. (the oldest)
2. Taitt. Prāt. (kernel).
3. (*a*) Atharv. Prāt. (kernel) } nearly contemporaries.
   (*b*) Vāj. Prāt. }
4. Pāṇini.
5. Taitt. Prāt. (later phase of).
6. Atharv. Prāt. (later phase of).
7. Ṛkt. (of the Sāmaveda).

The above chronological order differs from the one laid down by Liebich, Weber, and Lüders. According to Liebich,[6] only the Ṛg and

[1] On Pāṇini, I. 2, 29-30: *āyāmo dāruṇyam aṇutā khasyety uccaiḥ-karāṇi śabdasya, anvavasargo mārdavam urutā khasy eti nīcaiḥ-karāṇi śabdasya.* He then explains the meaning of every term—e.g., *āyāmo gātrāṇāṃ nigrahaḥ, dāruṇyaṃ svarasya dāruṇatā,* etc. The same passage occurs in Taitt. Prāt., XXII. 9-10.

[2] Weber, "Ind. Stud.," XIII. 442.

[3] XVI. 9.

[4] Sarūp, "The Nighaṇṭu and the Nirukta," p. 54.

[5] Nirukta, I. 17.

[6] "Zur Einführ. in die ind. ein. Sprachw.," II., pp. 38, 45, 46.

the Vāj. Prāt. precede Pāṇini; all the other Prātiśākhyas, in his opinion, are posterior to him. His opinion regarding the Vāj. Prāt. is not improbable: the crude verbosity of the Vāj. Prāt. seems to be primitive before the concise style of Pāṇini. But the view regarding the posteriority of all the other Prātiśākhyas (except the Ṛg) is open to question. As regards the Taitt. Prāt., Liebich says[1] that as this Prāt. is familiar with a few grammatical terms used by Pāṇini, it must be later than he. But though a few terms used by the Taitt. Prāt. are common to both, the *substance* and the *treatment* of the Prātiśākhya is very different from that of Pāṇini, as the following examples will show:

1. Anusvāra is a term used both by Pāṇini and the Taitt. Prāt. (and in fact all the other phonetic treatises except the Atharv. Prāt.), and yet the use of this term by the Taitt. Prāt. in word-building is very different. It explains forms like *rakṣāṃsi*, *jyotīṃṣi* by prescribing the rule[2] that after *ā*, *ī*, and *ū*, when followed by *ṣi* or *si*, anusvāra is inserted, and then, in a succeeding rule,[3] it states that forms like *dadāsi*, *dadhāsi*, etc., are exceptions. Had it been post-Pāṇineyan, it would have found it more convenient to use Pāṇini's differentiation between *si* as a verbal termination and *i* as a nominal termination. In that case there could have been no question of an anusvāra before the former. Again, in connection with the word *māṃsá-* as distinct from *mā́sa-*, it states[4] that the initial syllable *mā* when anudātta gets an anusvāra before *s*, and implies that it does not get the anusvāra when it is udātta, as in *mā́sa-*. Pāṇineyan grammarians,[5] on the other hand, would construct the word *māṃsa-* from the verb *man*, the *n* of which was said to be changed into anusvāra and then lengthened before *s*. And again,[6] regarding the forms *siṃha-*, *tṛṃh-*, and *dṛṃh-*, it prescribes that *si*, *tṛ*, and *dṛ* get the anusvāra when followed by *h*. But Pāṇini enumerates *tṛṃh* and *dṛṃh* among verbs, while he would have probably explained *siṃha-* as a modified metathesis of *hiṃs*.

2. Pāṇini[7] defines Saṃhitā as the closest contiguity of sounds; but the Taitt. Prāt. takes Saṃhitā in a wider sense. "Saṃhitā is that which is within the compass of a single breath,"[8] i.e. "a breath-group," and it was said to be of four kinds—viz., word-groups,

[1] *Op. cit.*, *ad loc.* [2] XVI. 14. [3] XVI. 18. [4] XVI. 8.
[5] Uṇādi, III. 64: *man jñāne, ataḥ so dhātor dīrghaś ca māṃsaṃ piśitam.*
[6] XVI. 26. [7] I. 4, 109. [8] V. 1.

accent-groups, (individual) sound-groups, syllable-groups.[1] In such cases there could be no question of borrowing from Pāṇini.

It may here be objected that the treatment of the Taitt. Prāt. differed from Pāṇini because it was a work on phonetics and strictly confined itself to that subject. But it should be borne in mind that Pāṇini's work did not exclude phonetics, just as the Taitt. Prāt. did not entirely exclude grammar from its scope. Had its kernel been post-Pāṇineyan, it would have shown some traces of Pāṇini's influence[2] in its treatment of phonetic subjects like the Anusvāra, Sāṃhitā, etc.

The fact seems to be that the grammatical terminology of the Taitt. Prāt. was among those transitional to Pāṇini, who perhaps incorporated these terms into his own system. The Taitt. Prāt., then, was not later than Pāṇini: its kernel was probably earlier.

While Liebich places the Taitt. Prāt. after Pāṇini, Lüders goes to the other extreme and suggests that it was "perhaps the oldest[3] of all the Prātiśākhyas." It seems to be more probable, however, that (1) the later phase of the Taitt. Prāt. was posterior even to the Atharv. and the Vāj. Prāt., while (2) its kernel, though anterior to the latter, was posterior to the Ṛg Prāt.

As regards the first point, the Taitt. Prāt. indicates a development of phonetic study which is much more advanced than any of the other Prātiśākhyas, as may be noticed in Chapters XVII.-XXIV.; cf., e.g., (*a*) the various opinions on the degree of nasality in the anusvāra and the nasal consonants (Chapter VII.); (*b*) the mention of new kinds or terms for accent, as *vikrama*[4] and *dhṛta*[5] of the Śikṣās; (*c*) the minute details on the various kinds of "pause"[6] so copiously dealt with in later Śikṣās; (*d*) further rules of syllabication (as plosive+fricative, plosive+semi-vowel, semi-vowel+semi-vowel)[7] not mentioned in any of the other Prātiśākhyas; (*e*) details on the seven musical tones[8] in their relation to accent, and the relation of tone and whisper,[9] the former of which is the main subject of the Nārada Ś. Had these remarkable theories been anterior to the other Prātiśākhyas, they would have been[10] mentioned and possibly developed by them.

[1] XXIV. 2. [2] Cf. Keith, "The Veda of the Black Yajus School," p. xl.
[3] Vyāsa Śik., p. 1. [4] XVII. 6. [5] XVIII. 3.
[6] XXII. 13. Cf. pp. 185 f. [7] See pp. 71, 75, 76. [8] XXIII. 14.
[9] XXIII. 5-12.
[10] The Ṛg Prāt. mentions the seven tones (XIII. 17), but its treatment is indefinite.

But there is a further interesting indication of the relative recency of the Taitt. Prāt. While all the other Prātiśākhyas, in their treatment of the lengthening of finals, take the Pada Pāṭha as their basis, and so maintain the old tradition pointed out by Yāska,[1] the Taitt. Prāt. in III. 1 takes the reverse position, and states that a final long vowel, under certain conditions, is shortened in the Pada Pāṭha. In V. 2, however, it takes the usual traditional Pada Pāṭha as the basis, stating that "the Pada Pāṭha, as it stands,[2] will be taken as the basis" (for the purpose of lengthening of finals, and other Sandhi rules). Why the Taitt. Prāt. breaks away from tradition in its third chapter and maintains it in its fifth chapter is a point on which the Vaidikābharaṇa throws very interesting light. It points out that "the *real* basis (*prakṛti*) is the Saṃhitā Pāṭha, the treatment of the Pada Pāṭha as the basis is designed to facilitate understanding, and in order to ward off the illusion, to which dull-minded persons are liable, that the Pada Pāṭha is *the* Veda, the undivided Saṃhita is here (in III. 1) taken as the basis."[3] One of the "dull-minded persons" was presumably the earlier commentator, the author of the Tribhāṣyaratna, who speaks of the Pada Pāṭha as "eternal and immovable."[4]

The Taitt. Prāt.'s treatment of the Saṃhitā as the real and of the Pada Pāṭha as a conventional basis was more scientific and unique in the history of Prātiśākhya literature. This is a distinct indication of advancement in the methods of exposition, and hence this point further confirms the relative recency of this Prātiśākhya.

It is difficult to determine which portions of the extant recension of the Taitt. Prāt. constituted its kernel. The following chapters seem to be older:

Chapter II., in which purely phonetic phenomena are described, and few traces of Pāṇini's method are visible.

[1] I. 17. Cf. Ṛg Prāt., Chapters VII.-IX.; Vāj. Prāt., III. 97-130; Atharv. Prāt., III. 1-25; Arnold, "Vedic Metre," preface, p. xii.

[2] Whitney (V. 2), misled by the Tribhāṣyaratna, translates "*yuktāt*" as "combined with," which is admittedly unsatisfactory. The Vaidikābharaṇa gives a satistactory paraphrase: "*yathābhūtaṃ śabdam āśritya*."

[3] On Taitt. Prāt., III. 1: *manda-matīnāṃ tu kaścid bhramaḥ prāduṣyād dhi bhakta-padātmako veda iti tan-nivāraṇārthaṃ tv ihāvibhakta-rūpaṃ· prakṛtim āśritya vibhāge hrasvatvaṃ vidhīyate . . . vibhakta-rūpasya tu prakṛtitvaṃ vyutpādana-saukaryārtham āśrīyate.*

[4] On V. 2: *kūṭasthād avicālinaḥ.*

Chapter VIII., in which the treatment of Visarga-sandhi, as in 14-15, is more empirical than Pāṇini's.

Chapter XVI. Similar treatment of the Anusvāra and the *pragṛhyas*.

The following chapters seem to be later accretions:

Chapter I. (on definitions). It defines accent exactly as Pāṇini does.[1] But recency cannot be attributed to the whole of this chapter, for side by side with such rules, Sūtras like I. 57 (*vinaso lopaḥ*) and I. 33-37 (crude definitions of short and long sounds, a short vowel being defined as that which has the quantity of a short *a*), do not seem to be post-Pāṇineyan.

Chapters XVII.-XIX.,[2] which give distinctly advanced theories as we find them in the Śikṣas.

As regards the Ṛg Prāt., Liebich, as mentioned above, places it earlier than Pāṇini, while Lüders is inclined to consider it as posterior to the Taitt. Prāt. The question then arises as to the relative chronology of the Ṛg and the Taitt. Prātiśākhyas. Now although it has been shown above that the Taitt. Prāt. gives indications of a development more recent than any of the other Prātiśākhyas, its kernel probably passed through much longer stages of development, and hence was far earlier. But even then, it indicates posteriority to the Ṛg Prāt. For, firstly, the style of the Ṛg Prāt. indicates considerable traces of archaism, as Maṅgala Deva Śāstrī has shown from copious examples[3] —an archaism which is hardly to be met with in the Taitt. Prāt. And, secondly, the Taitt. Prāt.'s treatment of the rudimentary items of phonetics is more precise and advanced, as the following data will show:

1. Ṛg Prāt., I. 11: "In the beginning there are eight simple vowels."
   Taitt. Prāt., I. 2: " In the beginning there are nine simple vowels."

The Ṛg Prāt. omits the vowel *ḷ*, and Uvaṭa explains it on the ground that *ḷ* does not occur in the Ṛg Veda, an error which has been pointed out by Max Müller.[4] Moreover, the Ṛg Prāt. itself, in a later verse,[5] does mention *ḷ*, including it among velar sounds. The Taitt. Prāt., however, includes it among the list of vowels in the very beginning.

1 Liebich, Ibid., p. 47.
2 Cf. Whitney, Taitt. Prāt., p. 432.
3 Ṛg Prāt. (Oxford), Introduction, pp. 18-24.
4 On Ṛg Prāt., I. 11.
5 I. 18.

2. As regards the Anusvāra, the Ṛg Prāt. first states[1] that the anusvāra is either a vowel or a consonant, and then[2] includes it among the "eight fricatives." The treatment of the Taitt. Prāt. is more precise and advanced. It mentions only six fricatives,[3] and keeps the anusvāra as a separate category.

3. A similar advance may be noted in its treatment of articulation. For instance, while the Ṛg Prāt. simply states[4] that *a* is a velar sound, the Taitt. Prāt. points out that in its articulation[5] the lips and the jaws are neither brought very near each other, nor very much separated. Again, while the Ṛg Prāt.[6] merely states that *ṭ* is a cerebral, the Taitt. Prāt.[7] specifies that "in a sound of the *ṭ*-class the tip of the tongue is rolled back against the *mūrdhan*." Similarly for several other sounds.

If, therefore, the anteriority of the Taitt. Prāt. to Pāṇini be accepted, that of the Ṛg Prāt. would then be even more probable. Goldstücker[8] argues for the posteriority of the Ṛg Prāt. to Pāṇini by stating that "the Ṛg Prāt. is infinitely more complete than Pāṇini," basing his arguments on its longer details—e.g., on the Sandhi of *ṣ* and *ṇ* and the lengthening of finals. But he has ignored the fact that the so-called exhaustiveness of the Ṛg Prāt. is only cataloguing of individual words; its treatment being almost exclusively empirical, and should therefore belong to a more primitive period.[9]

As regards the Atharv. Prāt., Weber[10] is of opinion that it is "the most systematic and therefore the latest of the Prātiśākhyas." But it should be borne in mind that in spite of its superior treatment it does not seem to be much later than the Vāj. Prāt. In fact, there are indications that its kernel was possibly even earlier than the Vāj. Prāt. For, firstly, it points out in the very beginning its traditional object as a Prātiśākhya[11]—viz., the relation of Pada and the Saṃhitā Pāṭha. The Vāj. Prāt.,[12] however, mentions its object as being the treatment

[1] I. 11. [2] I. 12. [3] I. 9, I. 18.
[4] I. 18. [5] II. 12. [6] I. 19.
[7] II. 37. Cf. Taitt. Prāt., II. 13, 14; II. 36, etc. [8] "Pāṇini," p. 199.

[9] The metrical style of this Prātiśākhya, however, may presumably be traced to an earlier stage, in which its kernel was composed in the prose or sūtra style, being the form in which works of this class were composed.

[10] "Ind. Stud.," IV. 79.

[11] I. 1: *Caturṇāṃ padajātānāṃ nāmākhyātopasarganipātānāṃ sandhyapadyau guṇau prātijñam.*

[12] I. 1: *svara-saṃskārayoḥ chandasi niyamaḥ.*

of "accent and Sandhi (*saṃskāra*)"—indicating a little deflection at least from the way of putting the traditional object. And, secondly, the Vāj. Prāt.[1] attributes to Śaunaka the opinion that a plosive followed by a fricative (of a different class) becomes a breathed aspirated consonant—e.g., in *samyakh-sravanti*. Now this rule (without, however, the reservation "of a different class") occurs in the Atharv. Prāt.,[2] and as tradition ascribes the authorship of the Atharv. Prāt. to Śaunaka,[3] it is not unlikely that the Vāj. Prāt. refers here to the Atharv. Prāt. Nor can this opinion be referred to Śaunaka, the traditional author of the Ṛg Prāt., for there[4] it is spoken of as "the opinion of some authorities." It is probable, therefore, that the Atharv. Prāt. and the Vāj. Prāt. were nearly contemporaries. To speak of the Atharv. Prāt. definitely as "the latest" Prāt., without any positive evidence, would be over-elaborating a merely relative chronology.

As regards the Ṛktantra Vyākaraṇa, the "Prātiśākhya" of the Sāmaveda, Burnell[5] has adequately shown that it is post-Pāṇineyan. And yet it does not seem to be a very recent production: it was possibly composed when Sanskrit was a spoken language, for it speaks of Skr. as *bhāṣā*—unless it merely imitates Pāṇineyan phraseology. Thus about the formation of *svairiṇī*, *akṣauhiṇī*, it says[6] that in *bhāṣā*, the simple vowels in these words become the diphthongs *ai* and *au* (by Sandhi) when the syllable *ṇī* follows. Again, it makes the interesting observation[7] that in *bhāṣā* the finals of *pra* and *apa* are lengthened before *vṛ* in the sense of "closing or guarding," as in *prāvṛṇute* (otherwise *pravṛṇute ṛtvijam*). Its contribution to quantity will be examined in Chapter XI.

Conclusion.

The above discussion leads to the following conclusions:

1. Patañjali knew the Taitt. Prāt.
2. Of the Prātiśākhyas, the Ṛg and the Taitt. seem to be the oldest.
3. The Prātiśākhyas seem to be essentially older than Pāṇini.
4. Portions of the Taitt., the Vāj., and the Atharv. Prātiśākhyas bear the stamp of recency, and possibly the influence of the Pāṇineyan school.

[1] IV. 120. [2] II. 6.

[3] Note the colophon of the Atharv. Prāt. (Whitney's Edition): *iti śaunakīya-caturādhyāyikā*.

[4] VI. 15: *ūṣmodayaṃ prathamaṃ sparśam eke dvitīyam āhur apadāntabhājam*.

[5] Preface, p. lv. [6] 96: *bhāṣāyāṃ ṇī-parayoḥ*.

[7] 212: *dīrghaṃ bhāṣāyāṃ prāpavṛṇotau saṃvaraṇe*.

The last three conclusions, however, cannot be maintained without reservation. For their evidence rests mainly on style and treatment. As regards the former, two contemporary persons may use styles with a varying degree of diffuseness or precision. Thus the Vāj. Prāt. need not be earlier than Pāṇini on the ground of its inferior style.

The same may be said of treatment. Hence it is not necessarily ' most probable "[1] that the Prātiśākhyas are older than Pāṇini.

As regards 4, an example may illustrate the possible influence of Pāṇini on the later phase of some of the Prātiśākhyas. Pāṇini uses the genitive case to indicate the substitution of one sound for another. But the Vāj. Prāt. nearly always uses the accusative, and so prescribes its[2] use. The same Prātiśākhya, however, on two occasions uses the genitive case in this sense, and gives another prescription to this effect, using exactly the same words as Pāṇini.[3] The use of the genitive case in the Vāj. Prāt., then, indicates the later influence of Pāṇini.[4]

The only advance made by the above inquiry, then, is the discovery of the passage from Patañjali's Mahābhāṣya (cf. p. 21). This passage gives us a definite starting-point for the chronology of the Prātiśākhyas.

Chronology of Sikṣās.

While the chronology of the Prātiśākhyas is obscure, that of the Śikṣās is infinitely more obscure. Very few of them quote any authorities or name any localities, and if they are mentioned, some of them are found in several Śikṣās, so that it becomes difficult to determine in which of them these data originally appeared. Few of them have any commentaries, and when they have, most of them are obscure and carelessly written. But the greatest difficulty lies in the corruption of their text. The same verses on the same subject appear in many Śikṣās, sometimes irrelevantly and without a plan, sometimes unnecessarily repeated, and so it becomes almost impossible to judge what the original text of a particular Śikṣā was. A few Sikṣās of the Taitt. school are an exception, as they are written on a more consistent plan; but the scarcity of chronological and geographical material characterizes these works as well. Many of them contain a number

[1] As maintained by Keith, "The Veda of the Black Yajus School," Vol. I., p. clxxi; Macdonell, JRAS, 1916, p. 619.

[2] I. 133; but cf. Pāṇ., I. 1, 49. [3] *ṣaṣṭhī sthāne yogā* (I. 136), Pāṇ., I. 1. 49.

[4] Liebich, *op. cit.*, p. 41. As regards Atharv. Prāt., cf. Ibid., p. 45.

of very valuable and striking phonetic observations not available in the Prātiśākhyas; they were really short monographs on certain points in phonetics, to some of which the common material of the "general" Śikṣā was subsequently added, in order that they might be introduced for class instruction in the schools. We shall therefore have to be contented with a general conspectus of these Śikṣās, pointing out the geographical or chronological material wherever any is available. Generally speaking, however, most of the Śikṣās as they exist in their present form bear the stamp of recency. Some of them quote or closely follow the Prātiśākhyas, while others propound opinions which betray Prākrit influence.

There is a large number of extant Śikṣās. I know of as many as sixty-five. Of these I have actually examined fifty—viz., thirty-one published in the Benares Edition of 1893 (Śikṣāsaṃgraha), sixteen MS. works in the Madras[1] Government Oriental MSS. Library, and three MS. works belonging to the Bhandarkar Oriental Research Institute, Poona. Many of these Śikṣās, however, are mere catalogues of certain sounds in the Vedas, and contain very little matter of any general interest for linguistics. For instance, the Māṇḍavī Ś. gives a list of words in Yajur Veda containing the consonant *b*; the Śamāna Śikṣā (Mad. MS. No. 977) catalogues the elisions of the Visarga in the Ṛgveda; the Vilaṅghyam (No. 960) enumerates words in the Yajur Veda with a final *e*, *ai*, *o*, *au*; the Padakārikāratnamālā (No. 921), attributed to Śaṃkarācārya, has forty chapters, and among other similar lists, contains an index of Vedic words with a final *n*. Even more famous Śikṣās like the Bhāradvāja and the Siddhānta Śikṣā are on the whole mere catalogues of words containing different sounds in alphabetical order, and were presumably prepared to insure accuracy in Vedic pronunciation, or to facilitate research work. Nevertheless, even these minor Śikṣās do not differ from several portions of the Prātiśākhyas themselves, which are mere catalogues of words; cf., for instance, Chapters VII.-IX. of the Ṛg Prāt., which enumerate lengthened finals, and similar chapters in the other Prātiśākhyas. These minor Śikṣās illustrate the way in which the Prātiśākhyas seem to have been built up—a gradual addition of material, general as well as particular.

[1] Unfortunately the Madras Government does not lend MSS. Only copies of those MSS. were sent to me.

The extant Śikṣās may be classified as follows:

1. The "general" Śikṣā.
2. The Śikṣās of the Ṛg Veda.
3. The Śikṣās of the White Yajur Veda.
4. The Śikṣās of the Black Yajur Veda.
5. The Śikṣās of the Sāma Veda.
6. The Śikṣās of the Atharva Veda.

1. Particulars of the "general" Śikṣā, called the Pāṇinīya Śikṣā, have been given above (pp. 5, 8 ff.). It has been shown that this Śikṣā was not the prototype of the Prātiśākhyas, and that it is a more recent work. Nevertheless, it may be designated the "general" Śikṣā, as it has enjoyed a leading position among the extant Śikṣās owing to its complete character as a Śikṣā proper, and as it has been found in two recensions, one belonging to the Ṛg Veda, and the other to the Yajur Veda (both ed. Weber, "Ind. Stud.," Vol. IV.). It has dominated the Pāṇineyan school of grammarians, who quote this Śikṣā more often than any other, while the portion common to this and the other Śikṣās has possibly been borrowed from this Śikṣā.

2. There are very few extant Śikṣās of the Ṛg Veda. Of these the Svara-vyañjana Śikṣā will be examined in Appendix A (see pp. 58 ff.). It will be shown there that it actually quotes the Ṛg Prāt., and that it is post-Pāṇineyan. Another Śikṣā, viz. the Śamāna Śikṣā, is of minor importance, and has been noted above (p. 29).

3. As regards the White Yajur Veda, the Caraṇa Vyūha[1] mentions five Śikṣās, though it does not name them. The Pārāśarī Ś. names eight Śikṣās,[2] which may be described as follows:

(*a*) The Yājñavalkya Ś., the most complete among the Śikṣās of the White Yajur Veda, has been connected with Yājñavalkya, presumably the founder of the Vājasaneyi school.[3] His name has been mentioned three times in the main body of the work:[4] "the wise Yājña

[1] (Ed. Weber) 24: *mantra-bhrāntiharaṃ caiva śikṣāṇāṃ pañcakaṃ tathā.*

[2] ŚS, p. 60:

> *Yājñavalkyī tu vāsiṣṭhī śikṣā kātyāyanī tathā*
> *parāśarī gautamī tu māṇḍavyāmogha-nandinī, pāṇinyā*
> *sarva-vedeṣu sarva-śāstreṣu gīyate, vājasaneyi-*
> *śākhāyāṃ tatra mādhyandinī smṛtā.*

[3] Introduction to Pāraskara Gṛhya Sūtra, p. 70.

[4] ŚS, p. 3: *varṇo jātiś ca mātrā ca gotraṃ chandaś ca daivatam*; also pp. 17, 35: *etat sarvaṃ samākhyātaṃ yājñavalkyena dhīmatā.*

valkya has propounded these rules of 'caste and colour' (of accent), quantity, metre, their authors and deities." From these three passages it appears that Yājñavalkya is not claimed here as the author of the text in its present form. On ŚS, p. 2, however, is mentioned "Somaśarman's" opinion[1] on quantity. Now Somaśarman is a comparatively recent name: it occurs, according to the St. Petersb. Lexicon, in the Viṣṇu Purāṇa and the Pañcatantra, and if he is the real author of this Śikṣā, the upper limit of his date should not be earlier than the fifth century A.D. Moreover, there are traces of modern Hindu views in this work: thus the plosives are said to pertain to the God Saturn (Śanaiścara).[2]

As regards its lower limit, Uvaṭa quotes this Śikṣā in his commentary on the Vāj. Prāt.[3] Now Uvaṭa is said to have worked under the patronage of a king named Bhoja;[4] this king Bhoja is probably the famous scholar of Mālwā, for Uvaṭa at the end of the Vāj. Prāt. calls himself a native of Ānandapura,[5] and Ānandapura, according to Smith,[6] was a principality under Mālwā. But the date of Bhoja[7] was about 1018 A.D. Uvaṭa, therefore, lived about the eleventh century, and allowing about a century for the acceptance of the Śikṣā as an authority, the lower limit of its date may be assumed as the tenth century A.D. With these data the Yājñ. Ś. is about three centuries earlier than the Vyāsa Ś., which Lüders[8] assigns to the thirteenth century.

The Śikṣā quotes the Vāj. Prāt. on several occasions,[9] and throws some light on the above-mentioned rule (see p. 27) of the Vāj. Prāt. regarding the aspiration of a plosive before a fricative. It says that the change in question does not occur before a fricative of the *same class* in the Mādhyandina[10] school, though it occurs under similar con-

[1] *nimeṣo mātrākālaḥ syād vidyut-kāleti cāpare, akṣarātulya-yogatvān matiḥ syāt soma-śarmaṇaḥ.*

[2] ŚS, p. 32: *pañcaviṃśati sparśāḥ kṛṣṇāḥ vyākhyātāḥ śanaiścara-daivatyāḥ.*

[3] IV. 163: *tathā coktaṃ yājñavalkyena:—yamān vidyād ayas-piṇḍān sāntasthān dāru-piṇḍavat, antasthā-yamavarjaṃ tu ūrṇāpiṇḍam vinirdiśet.* The verse occurs in Yājñ. Ś., ŚS, p. 29.

[4] Aufrecht, *Catalogus Catalogorum.*

[5] *ityānanda-pura-vāstavya-vajraṭa-sūnunovvaṭena kṛte*, etc.

[6] "Early History of India," p. 342.

[7] Ibid., p. 410.

[8] Vyāsa Śik., p. 107.

[9] E.g. II. 20 (on pluta), ŚS, pp. 19-20; I. 65 (on ṛ), ŚS, p. 33.

[10] ŚS, p. 20: *naitan mādhyandinīyānāṃ sasthānatvāt tayor dvayoḥ, sasthāne 'pi dvitīyaṃ syād āpastambasya yan matam.*

ditions in the Āpastamba school. This variation was apparently dialectic, as it may be noticed even in modern dialects. Thus while the Skr. group *ps* is generally represented by *ch* in modern Indian languages, the group *ts* has a divergent treatment. It remains unchanged (except for expiration in its second element) in a few dialects of the north-west: cf. Ṣiṇā *bătsho* or Gurezi *bătshóu* for Skr. *vatsa-*; but it has become[1] *ch* in other languages—e.g., Panjabi-Lahndi *vacchā*, Hindi *bāchā*. The north-west group, in this respect, may represent the Mādhyandina school. The Śikṣā further makes interesting[2] observations on *y* and *v* in various positions as detailed in Chapter VI. This would possibly connect the Śikṣā with areas in which Śaurasenī was spoken.

(*b*) The Vāsiṣṭhī Ś., the second in the list of the Śikṣās of the White Yajur Veda, is not a work on phonetics, and is therefore different from a Śikṣā of the same name in the Taitt. school to be noted below. It is devoted to the distribution of verses (*ṛc*) and sacrificial formulas (*yajus*) in the Ṛg and the Yajur Veda. It is admittedly[3] a selection from the Sarvānukramaṇī, and is therefore a comparatively recent work, designed as a handy manual for reference. The designation of this work as "Śikṣā" is another example of the secondary sense in which the term was often employed in the later phases of Vedic literature.

(*c*) The next Śikṣā mentioned is the Kātyāyanī. In the form that we find it at present, it is of little importance, being a fragmentary work on accent containing only thirteen verses.[4] Most of the rules prescribed are a metrical exposition of those laid down in Vāj. Prāt., IV. 131-141.

(*d*) The Pārāśarī Śikṣā, to which we owe the list of the Śikṣās belonging to the White Yajur Veda, speaks of itself as the foremost among the Śikṣās "like Virāj among the gods, or like Puṣkara among the holy places."[5] It claims to be a Śikṣā of the Pārāśaras, which has been classed as a school of the White Yajur Veda along with Kāṇva, Mādhyandina, etc.[6] But as it mentions nearly all the leading Śikṣās of

[1] I owe the above data to Professor R. L. Turner. [2] ŚS, p. 23.

[3] ŚS, p. 36:

atha śikṣāṃ pravakṣyāmi vāsiṣṭhasya mataṃ yathā
sarvānukramam uddhṛtya ṛgyajuṣos tu lakṣaṇam.

[4] ŚS, pp. 46-51.

[5] ŚS, p. 52: *yathā deveṣu viśvātmā yathā tīrtheṣu puṣkaram, tathā pārāśarī sarvaśāstreṣu gīyate.* [6] Caraṇavyūha, 19.

the White Yajur Veda, it should be posterior to them, so far as its present form is concerned, although its kernel may have been much older. Besides the reference to a modern holy place like Puṣkara, the Śikṣā offers the horrors of a hell, well known to modern Hinduism, named Kumbhīpāka,[1] to those who mispronounce Vedic texts. The modernity of its present form is further confirmed by its observations on the pronunciation of *v* in various positions.[2]

Some of its original contributions may be mentioned:

1. The half-long vowel *kṣipra* (cf. p. 178); (2) *v* the product of Sandhi is "light" (cf. p. 129); (3) the observation that the intervocalic double *k* in *kukkuṭa must* be pronounced double is contrary to the Vāj. Prāt.'s rule, and indicates dialectic divergence.[3]

It is a fairly complete Śikṣā, on the lines with the Yājñ. Ś., and gives a copious number of examples[4] from the White Yajur Veda.

(*e*) The next Śikṣā mentioned by the Pārā. is the Gautamī. As available in the present form, it belongs to the Sāma Veda, and will be examined under that head (cf. p. 51).

(*f*) The Māṇḍavī Śikṣā is attributed to Māṇḍavya,[5] a name mentioned in the list of families in the Śatapatha Brāhmaṇa.[6]

The Māṇḍavya families, according to Varāhamihira,[7] lived in the middle, the north-west, and the north. The nature of the Śikṣā, however, seems to indicate its connection more with the middle and east, than with the north, for it is exclusively devoted to the enumeration of words containing the labial plosive *b* (cf. p. 130). This was presumably done in order to prevent the confusion between *v* and *b*, which was probably more common in the above-mentioned areas than in the north. It is possible, however, that the Śikṣā refers to a period when the pronunciation in question was still found in the north. For the confusion of *v* and *b* is still found in some of the north-western

[1] ŚS, p. 58: *anyathā nirayaṃ yānti kumbhīpākaṃ ca dāruṇam.* Cf. Bhāgavata Purāṇa, V. 26, 7 (St. Pet. Lexicon).

[2] Ibid., p. 58. Cf. p. 129.

[3] ŚS, p. 59: *kukkuṭaḥ kāma-lubdho 'pi kakāra-dvayam uccaret, evaṃ varṇāḥ prayoktavyāḥ kukkuṭo' si nidarśanam.* Cf. Vāj. Prāt., IV. 142.

[4] These have been mostly identified by the editor of the Śikṣā Saṃgraha.

[5] ŚS, p. 72: *athātaḥ saṃpravakṣyāmi śiṣyāṇāṃ hitakāmyayā, māṇḍavyena yathā proktā oṣṭha-saṃkhyā samāhṛtā.*

[6] X. 6, 5, 9: *atha vaṃśaḥ:—samānam āsāṃjīvi-putrāt . . . māṇḍavyān māṇḍavyaḥ kautsāt kautsaḥ. . . .*

[7] Weber, "Ind. Studien," XIII. 125.

dialects like Ḍogrī and Bhadarvāhī in western Pahāṛī, and Ṣiṇā in Dardic.

(*g*) The Amoghānandinī Śikṣā is composed on the same lines as the Yājñ. and the Pārā., but to some extent its object seems to have been similar to that of the Māṇḍavī Ś., for it gives a list of words with an initial labio-dental *v*, and another with the labial plosive *b*. It was, therefore, presumably composed in the same area as the Māṇḍavī Śikṣā.

Like the Yājñ. Śik., it follows the Vāj. Prāt.: cf. the list of plutas on ŚS, p. 98; but it mentions more terms for nasal sounds—viz., (Raṅga), Mahāraṅga, and Atiraṅga, the significance of which, however, is obscure.[1]

(*h*) The Mādhyandinī Śikṣā attributed to a "Maharṣi Mādhyandina,"[2] and its abridged form, the Laghu Mādhyandinī Śikṣā, are apparently modern. The former gives a list of words with a velar *kh* as *ākhúḥ, mayū́khaiḥ*, in order to distinguish the sound from the cerebral[3] *ṣ*. The latter work gives a rule that the cerebral *ṣ* was to be pronounced as *kh*, except before a cerebral plosive.[4] But unfortunately there are absolutely no references to time or place in these Śikṣās. Nevertheless, it is interesting to note that these Śikṣās refer to an actual confusion between *ṣ* and *kh*, as may be corroborated by the pronunciation of Skr. *tatsamas* in modern Indian languages. Thus, while some of the eastern dialects, e.g. Behari, pronounce Skr. *ṛṣi-* as *rikhi*, Panjabi and western Hindi have generally *riśi*, while Lahndi has commonly *rikhi*. Before cerebrals, however, *ṣ* of tatsama words, as noticed by the Śikṣās, is not pronounced as *kh*, but *ś*—e.g., no modern dialect pronounces *tatsama duṣṭa*—as *dukhṭa*.

Besides the above Śikṣās of the White Yajur Veda mentioned by the Pārā. Ś., the following two Śikṣās may be mentioned:

(*a*) The Varṇa-ratna-dīpikā Śikṣā is a fairly complete Śikṣā, on the same lines as the Yājñ. Ś. It is evidently modern, for it admittedly follows[5] the Prātiśākhya. The author gives his name as Amareśa, and says he belongs to the family of Bhāradvāja.

[1] ŚS, p. 97. [2] Ibid., p. 109.

[3] Ibid., p. 110: *atra kavargīya-khakārā nirdiśyante*, etc.

[4] Ibid., p. 114: *atha śikṣāṃ pravakṣyāmi mādhyandina-mataṃ yathā, ṣakārasya khakāraḥ syāt ṭuka-yoge tu no bhavet.*

[5] Ibid., p. 117:

> *amareśa iti khyāto bhāradvāja-kulodvahaḥ, so 'haṃ*
> *śikṣām pravakṣyāmi prātiśākhyānusāriṇīm.*

In the pronunciation of ṛ and r it follows the Yājñ. Ś., for it speaks of ṛ as velar and r as alveolar.[1]

(b) The Keśavi Ś. is a concise and lucid exposition of some of the comparatively recent phonetic changes which it attributes to the Mādhyandina school—e.g., ṣ to be pronounced as *kh*, *y* and *v* in various positions (cf. Chapter VI.), the pronunciation of Svarabhakti as *e*, the slight lengthening of a short vowel unless followed by *ā* (cf. p. 179), etc.[2] The author is said to be the astrologer Keśava, and he admittedly follows the Pratijñā Sūtra.[3]

The Pratijñā Sūtra forms a supplement to the Benares edition of the Vājasaneyi Prāt., and its authorship is attributed to Kātyāyana.[4] The work embodies in a Sūtra form the recent phonetic changes expounded by the Keśavī Ś. It is hardly likely, however, that so ancient an author as Kātyāyana was actually the author of this work, which prescribes pronunciations characteristic of modern Indian vernaculars. Moreover, the Caraṇavyūha does mention a Pratijña Sūtra which was said to be the third Pariśiṣṭa of the White Yajur Veda, but its subject-matter being ceremonial,[5] it is quite different from the work before us. It is possible, however, as Weber[6] thinks, that the work is a production of another man born in the family of Kātyāyana. He may have summarized into Sūtra form some of the similar rules from the Yājñ. Ś., though the rule regarding the pronunciation of ṣ as *kh* does not occur even there.

The above is a short conspectus of the Śikṣās of the White Yajur Veda. The Śikṣās that may be regarded as fairly complete are only four—viz., the Yājñ., the Pārā., the Amoghānandinī, and the Varṇaratnadīpikā Śikṣās. Of these four, the oldest, as will appear from the above discussion, is the Yājñ. Śikṣā, the lower limit of its date being the tenth century A.D. As all these Śikṣās prescribe the

[1] Ibid., p. 119:

ṛvarṇo 'tha kavargaś ca jihvā-mūlīyā eva ca
jihvāmūle bhavanti . . . rephaś ca danta-mūlotthaḥ.

[2] ŚS, pp. 128-148.

[3] Ibid., p. 149:

iti śrī-daivajña-keśava-kṛtā pratijñā-sūtrānu-
sāriṇī keśavī śikṣā samāptā.

[4] Also edited Weber, "Abhandlungen der königlichen Ak. der Wissensch. zu Berlin," for 1870.

[5] Weber, "Ind. Stud.," X., p. 433.

[6] Weber, Ibid., p. 436.

peculiar *y* and *v* pronunciations, they presumably belong to the Śaurasenī area, as some of them speak of these phonetic phenomena as being peculiar to the Mādhyandinīya[1] school, which was confined to the Madhya Deśa.[2]

The Śikṣās of the Black Yajur Veda may be described under two heads: (1) The Śikṣā of the Cārāyaṇīya school; (2) the Śikṣās of the Taitt. school.

1. The Cārāyaṇīya Śikṣā is a MS. work, of which I have examined two MSS.: (*a*) No. 21 of 1875-76, Bhandarkar Oriental Research Intitute, Poona; (*b*) Sanskrit 25 of the University Library, Göttingen. The treatise speaks of itself as a "Mahāśikṣā, spoken by the Creator himself,"[3] and the fruit of understanding it is said to be a place in Brahma-loka. It is a complete Śikṣā, even more complete than the Yājñ. Ś., for it gives a full chapter (Chapter III.) on Sandhi rules, another on abhinidhāna (Chapter VIII.), which it calls *bhukta* or *bhakṣya* (cf. p. 142), and another on metre. It belongs to the Cārāyaṇīya school, which, according to the Caraṇa-vyūha,[4] was one of the twelve subdivisions of the Caraka school of the Black Yajur Veda. The school was presumably known to Patañjali, who speaks of a pupil of Cārāyaṇa—"fond of a blanket."[5] The Śikṣā quotes a passage[6] which is possibly taken from the extinct text of the Cārāyaṇīya school, as only a part of the passage can be traced in the Kauṣītaki Saṃhitā. The treatise bears the stamp of the classical period. The fifth chapter is devoted to classical metre: metres like Indravajrā, Praharṣa, etc.,

[1] Yājñ. Ś., ŚS, p. 20. Keśavī, Ibid., p. 138.

[2] Weber, "Ind. Stud.," IV. 72. Cf. p. 128.

[3] Göttingen, Folio 1: *Oṃ prāk prapadye vibhuṃ bhaktyā sarva-loka-pitāmaham, śikṣāṃ sākṣāt pravakṣyāmi tenaivālapitām aham, cārāyaṇīṃ mahāśikṣāṃ pravakṣyāmy anupūrvaśaḥ, nibodhata budhair juṣṭāṃ nityaṃ vāṅmala-śāntaye.*

Fol. 11, colophon: *Ya idaṃ paṭhate nityaṃ yaś cādhyāpayed dvijam, asyārthaṃ budhyate yo vai brahma-lokaṃ sa gacchati.*

[4] (Benares):

> 10: *yajurvedasya ṣaḍaśītir bhedā bhavanti.*
> 11: *tatra carakā nāma dvādaśavidhā bhavanti carakā hvarakā . . . cārāyaṇīyāḥ.*

[5] On Pāṇini, I. 1, 73: "*kambala-cārāyaṇīyaḥ*"; Kaiyyaṭa's explanation: *kambala-priyasya cārāyaṇīyasya śiṣyaḥ.*

[6] Fol. 6: "*agne samrāḍ ajaikapād āha(va)nīya*" *amāvasyāyāṃ vā yajate.* The portion of the line within inverted commas can be traced in the Kauṣītaki Saṃhitā, VII. 13, but not the succeeding portion.

have been described.[1] Moreover, the Śikṣā does not seem to have been the prototype of the Prātiśākhyas, for (*a*) like the Pāṇ. Ś., it speaks of *ṛ* and *r* as cerebrals;[2] (*b*) it quotes the Vāj. Prāt. on two occasions.[3] The Śikṣā seems to be posterior to the Pāṇ. Ś., for while it prescribes the cerebral pronunciation of *ṛ* and *r*, it enumerates ten places of articulation,[4] mentioning two—viz., corner of the mouth (*sṛkva*) and the roots of the teeth (*danta-mūla*)—in addition to the eight mentioned by the Pāṇ. Ś.,[5] and is thus a further development on that Śikṣā. The Śikṣā gives no geographical data. It prohibits[6] the pronunciation of Svarabhakti as *i* or *u*, from which we may assume that *i* and *u* vocalization of Svarabhakti was actually current in the area where the Śikṣā was composed. In that case only a negative conjecture could be made —viz., that the Śikṣā belonged to an area in which Ardhamāgadhī and Apabhraṃśa were not predominant, as, according to Pischel,[7] the Svarabhakti vowel *a* was more frequent in these dialects.

2. The Śikṣās of the Taitt. school are by far the most important contribution to Indian phonetics. As their MSS. are available only in South India, they were presumably composed in that part of the country. That South India became *par excellence* the home of Vedic studies during the medieval period has been noted by Indian tradition. Thus Rāmakṛṣṇa[8] quotes a passage from Vyāsa and another from a

[1] Fol. 7: *ekādaśopendra-vajraṃ dvādaśaṃ tu jaloddhatam, trayodaśākṣara-padaṃ praharṣaṃ vṛttam ucyate.*

[2] Fol. 2: *mūrdhany* [*sic*] *ṛturaṣā jñeyā dantyā ḷtulasā smṛtāḥ.*

[3] Fol. 9: *varṇasyādarśanaṃ lopaḥ.* Vāj. Prāt., I. 141.

Fol. 4: "*svaro' kṣaram*" *iti prāhur ācāryā akṣara-cintakāḥ.* Vāj. Prāt., IV. 99.

[4] Fol. 1: *daśa sthānāni varṇānāṃ kīrtayanti manīṣiṇaḥ, yataḥ pravṛttir varṇānāṃ tāni me gadataḥ śṛṇu, uraḥ kaṇṭhaḥ śiras tālu dantā oṣṭhau tu nāsikā, jihvāmūlaṃ tu sṛkvaś ca dantamūlas tathaica va* [*sic*]. Both the MSS. (Poona as well as Göttingen) read *dantamūlas tathaiva ca.*

[5] ŚS, p. 379: *aṣṭau sthānāni varṇānām.*

[6] Fol. 9: *svarabhaktīḥ prayuñjānas trīn doṣān varjayed budhaḥ, ikāraṃ cāpy-ukāraṃ ca grasta-doṣān vivarjanāt.*

[7] Page 103.

[8] In his introduction to Pāraskara Gṛhya Sūtra, p. 58:

tathā ca vyāsaḥ:

samprāpte tu kalau kāle vindhyādrer uttare sthitāḥ, brāhmaṇā yajña-rahitā jyotiḥ-śāstra-parāṅmukhāḥ.

dharma-śāstre:

vindhyasya dakṣiṇe bhāge yatra godāvarī sthitā tatra vedāś ca yajñāś ca bhaviṣyanti kalau yuge.

"Dharma Śāstra" to the effect that "during the Kali age, the Brahmans north of the Vindhya will be devoid of Yajñas and averse from astrology. The Vedas and the Yajñas will be current in the region south of the Vindhya where the Godāvari flows." These Vedic studies stimulated the growth of the Taitt. Śikṣās, in which the study of phonetics was extended to a very advanced stage, as the chapters on quantity and accent (cf. Chapters XI. and X.) will show.

There is a large number of Śikṣās connected with the Taitt. school, of which I have examined sixteen. But it is difficult to determine definitely which of these works was really original, and we have to depend a great deal upon tradition in the solution of this difficulty. A MS. work,[1] the Veda-lakṣaṇānukramaṇikā, mentions nine primary Śikṣās and three secondary Śikṣās. The former were said to be the "Bhāradvāja, Vyāsa, Śambhu, Pāṇini, Kauhalīya, Bodhāyana, Vālmīki, and the Hārita ("Harita") Śikṣās," while the latter were "the Sarvasammata, the Āraṇya, and the Siddhānta Śikṣās." The former list also occurs in the commentary on the Siddhānta Śikṣā.[2]

The Taitt. Śikṣās may now be briefly examined:

(*a*) The Bhāradvāja Śikṣā[3] is a monograph on certain words of the Taitt. Saṃhitā which were either liable to be mispronounced or confused with others of a slightly different form. Thus verse IL. prescribes that the final consonant in the *tāriṣat* of Taitt. S., I. 5, 11, 4 is *t*, but it is not *t* in the *tāriṣaḥ* of Taitt. S., III. 3, 11, 4. The treatment of this Śikṣā, then, is empirical, and it contains very few observations of general interest to linguistics. Of these, the one on the syllabic nature of *l* between two consonants will be noted on p. 57. This Śikṣā seems to be comparatively old, perhaps a contemporary of the

[1] No. 967 (Madras, of 1905).

(*a*) Nine primary Śikṣās:

bhāradvāja-vyāsa-śaṃbhu-pāṇini-kauhalīyakam, bodhāyano vasiṣṭhaś ca vālmīkir haritaṃ nava. 5.

(*b*) Three secondary Śikṣās:

sarva-sammatam āraṇyaṃ tathā siddhāntam eva ca, upaśikṣā ime proktā lakṣaṇa-jñāna-kovidaiḥ. 6.

[2] On verse 2:

bhāradvāja-vyāsa-pāṇini-śambhu-kohala-vasiṣṭha-vālmīki-harita-bodhāyanokta-śikṣādikaṃ parāmṛśya. . .

[3] Edited E. Sieg.

Vyāsa Śikṣā, for the author of the Siddhānta Śikṣā, as noted above, mentions in his commentary the name of the Bhār. Ś. as the first among the list of the Śikṣās.

(*b*) The Vyāsa Śikṣā has been exhaustively examined by Lüders,[1] who puts the lower limit of its date as the middle of the thirteenth century. Its views on doubling and quantity will be discussed on pp. 119, 177, 186. Its theory of articulation is somewhat different from that of the Pāṇ. Śik. Instead of the 'head' "*śiras*" and the uvula "*jihvāmūla*" of the Pāṇ. Śik., it mentions the three parts of the mouth passage—viz., the beginning, the middle, and the end[2]—while it does not speak of *r* as cerebral, but as alveolar.[3] These data seem to indicate that the Pāṇ. Śik. was not held as a Vedāṅga even by such a careful work as the Vyāsa Śik.

(*c*) The existence of the Śambhu Śik. provided matter for conjecture to Kielhorn[4] and Lüders,[5] the former supposing it to be Pāṇ. Śik. in another garb. I have, however, actually found this Śik. among the Madras MSS. (No. 988 of 1905). It is a work considerably different from the Pāṇ. Śik. It lays down much more advanced theories of quantity[6] and accent, and has been occasionally quoted by the Tribhāṣyaratna and the Vaidikābharaṇa.[7] It seems to be a comparatively old

[1] Vyāsa Śik., p. 107.

[2] XXIV. 6: *kaṇṭho vaktrādi-madhyāntaṃ danta-mūlānta-nāsikam tālvoṣṭham uraḥ-sthānāni varṇānāṃ karaṇāny adhaḥ.*

But cf. Pāṇ. Śik., ŚS, p. 379:

aṣṭau sthānāni varṇānām uraḥ kaṇṭhaḥ śiras tathā
jihvāmūlaṃ ca dantāś ca nāsikoṣṭhau ca tālu ca.

[3] Cf. p. 8.

[4] *Indian Antiquary,* V. 199.

[5] Vyāsa Śik., p. 111.

[6] Cf. Tribhāṣyaratna on Taitt. Prāt., I. 1:

vidher madhyastha-nāsikyo na virodho bhavet smṛtaḥ
tasmāt karoti kāryāṇi varṇānāṃ dharma eva tu.

This verse, quoted by the Tribh. in its discussion of the anusvāra as a *dharmī* or a *dharma,* is the forty-fifth verse in the Śambhu Śik.

On Taitt. Prāt., XXI. 15: *indriyāviṣayo yo,* etc. (cf. p. 176), is the forty-sixth verse in the Śambhu Śik.

[7] The Vaidikābharaṇa on Taitt. Prāt., I. 40, quotes the following:

anudātto hṛdi jñeyo mūrdhny udātta udāhṛtaṇ
svaritaḥ karaṇa-mūlīyaḥ sarvāsye pracayaḥ smṛtaḥ.

It is the thirty-sixth verse in this Śik.

work, perhaps a contemporary of the Vyāsa Śik. The first verse betrays the stamp of modern Hinduism, as the author offers his greetings to Kālikā, Lakṣmī, and Sarasvatī. It is a concise but fairly complete Śik., dealing with accent, quantity, hiatus, doubling, Svarabhakti, etc.

(*d*) The next work mentioned is the Pāṇ. Śik. Possibly a Taitt. recension of this Śik. also existed, though I have not yet found any MS. of the work in this school.

(*e*) The Kauhalīya Śik. (No. 893) is a short manual of seventy-nine verses, the first forty-one of which are devoted to accent. The Śik. professes "to follow the teaching of Kauhali."[1] It is difficult to say whether this name is essentially related to Kauhalīputra, a phonetician mentioned in Taitt. Prāt., XVII. 2, who held that the degree of nasality in anusvāra and the nasal consonant was moderate. But the opinion is not mentioned in this Śik.

In a verse which has been quoted by the Vaidikābharaṇa[2] on Taitt. Prāt., V. 14, it states that "only he can expound the Jaṭā Pāṭha who knows the Śāstras like the Prātiśākhyas and who is an expert in all the Śikṣās." This reference, and the fact that it contains little that is not common to other Śikṣās, indicate it to be a comparatively recent compilation. Regarding the movements of the hand in accentuation, it prescribes the use of "the right, and not the left, hand."[3]

(*f*) Bodhāyana. This Śikṣā, mentioned by our authorities, has not yet been discovered, so far as I am aware.

(*g*) The Vasiṣṭha Śik., according to Lüders,[4] seems to be older than the Vyāsa Śik., as "it used an older text." The Vaidikābharaṇa also quotes it,[5] stating that it mentioned "26 vowels, but excluded the long *ḷ*." My copy of the text,[6] however, is a fragmentary work, containing only thirteen verses, devoted almost entirely to doubling.

(*h*) The Vālmīki Śik. has not yet been discovered. The Taitt.

[1] *atha śikṣāṃ pravakṣyāmi kauhalīya-matānugām*
svarādi-nirṇayas tatra kriyate tan nibodhata. 1.

[2] *prātiśākhyādi-śāstrajñaḥ sarva-śikṣā-viśāradaḥ*
buddhi-śakti-sameto yaḥ sa jaṭāṃ vaktum arhati. 55.

[3] *svarān hastena vinyasyed vipaścid dakṣiṇena tu*
śreyo vipulam anvicchan na savyena kadācana. 35.

[4] Vyāsa Śik., p. 106.

[5] Taitt. Prāt., p. 8: *tad ucyate vāsiṣṭha-śikṣāyām, ḷvarṇa-dīrghaṃ parikāpya svarāḥ ṣaḍviṃśati proktā ityādinā*, etc.

[6] No. 957 (of 1905, Madras).

Prāt. quotes Vālmīki's opinion in two passages; in the first of these passages the accent of the syllable " Om " was said to be high,[1] while in the second, Vālmīki's disapproval of the change of Visarga into jihvāmūlīya and Upadhmānīya has been mentioned.[2] It is not unlikely, therefore, that Vālmīki, whoever he may have been, as a phonetician was actually the author of a Śikṣā attributed to his name.

(*i*) The Hārita Śikṣā similarly remains to be discovered. As it has been quoted by the Pāriśikṣāṭīkā,[3] its actual existence in a comparatively recent period may not have been impossible. Moreover, the Taitt. Prāt. also[4] quotes the opinion of a phonetician Hārīta on the non-duplication of a breathed fricative.

Besides the above primary Śikṣās, the following secondary Śikṣās have been mentioned:

(*a*) The Sarvasammata Śikṣā, MS. No. 998 (of 1905, Madras), is a far different work from the one edited by Otto Franke in 1886. The latter is a short manual of forty-nine verses, with no mention of the author's or the commentator's name, and with a very meagre treatment of the most difficult points in phonetics—viz., accent and quantity. The work examined by me, however, is more than three times the size of Franke's treatise. It has 170 verses, and has four chapters with an exhaustive commentary. The name of the author[5] is Keśavārya, while that of the commentator[6] is Mañci Bhaṭṭa. Franke's commentator seems to be a different person, for not only does his commentary vary in point of treatment, the introductory verse[7] of each is also different. Mañci Bhaṭṭa's commentary explains " Sarva-sammata " as that which " expounds subjects common and acceptable to

[1] XVIII. 6: *udātto vālmīkeḥ.*

[2] IX. 4: *kavarga-paraś cāgniveśya-vālmīkayoḥ.*

[3] On verse 27: *tatra hārīta-śikṣā:*

> *manaḥ kāyāgnim āhanti sa prerayati mārutam*
> *mārutas tūrasi caran mandraṃ janayati svaram.*

[4] XIV. 18: *ūṣmāghoṣo hārītasya.*

[5] IV. 121: *sūrya-deva-budhendrasya nandanena mahātmanā praṇītaṃ keśavāryeṇa lakṣaṇaṃ sarva-sammatam.*

[6] Cf. the colophon at the end of the commentary: *iti śrīmañcibhaṭṭa-viracitaṃ sarva-saṃmata-śikṣā-vivaraṇaṃ samāptam.*

[7] Franke's commentator thus begins: *dhyātvā sarva-jagannāthaṃ sāmbaṃ sarvārtha-sādhakaṃ vyākhyāyate 'dhunā śikṣā sarva-sammata-lakṣaṇā.* But Mañci Bhaṭṭa: *gaṇeśvaraṃ praṇamyāhaṃ loka-pālān grahān gurūn, sarva-saṃmata-śikṣāyā vakṣye vyākhyānam uttamaṃ.*

all the phonetic works, the Prātiśākhya, etc., belonging to the Taitt. school."[1] There is no such explanation given by Franke's commentator. Again, Franke's edition (p. 31) has only two verses on accent, describing the "castes" of the three accents; but the Madras MS. has thirty-three verses, and a fairly copious treatment of accent. The two verses of his edition do not occur among these thirty-three verses, but are found about the end of the Madras MS., being verses IV. 104, 105. Again, regarding this Śikṣā, Lüders[2] remarks that certain portions of this work are "evidently nothing but elaboration of the corresponding portions of the Vyāsa Śik." This may be true of Franke's edition, but not so much of the Madras MS., which contains some material hardly to be met with in any other extant Śikṣā. For instance, its observation that the quantity of a consonant without a vowel is a quarter-mora,[3] and that the quantity of a "pause" between a labial vowel and the first member of a consonant-group is a half-mora, provided that the consonant-group intervenes between two labial vowels—e.g., in *utpūtá-*, the "pause" between *u* and *t* was said to be a half-mora.[4] Whatever may be said of these opinions, it is not unlikely that they are original theories of the Śikṣā itself. Moreover, although the work is admittedly of a secondary character, its date does not seem to be very recent, for it has been quoted both by the Tribhāṣyaratna and the Vaidikābharaṇa.[5]

(*b*) The Āraṇya Śikṣā (MS. No. 866) is a monograph on accent in the Taitt. Āraṇyaka. It enumerates words with accent in different positions—those with an initial accent,[6] those with two final udāttas, etc. (see p. 166). On verse 27 the commentary has an interesting discussion on the relation of accent and quantity (see p. 166). This Śikṣā

[1] *sarva-sammatam sarveṣām taittirīya-śākhopayoginām prātiśākhya-prabhṛtīnām sammatam samānārtham lakṣyante prakāśyante 'neneti-lakṣaṇam.*

[2] Vyāsa Śik., p. 106. [3] IV. 95 (see p. 184).

[4] IV. 80: *oṣṭhayoḥ svarayor madhye saṃyogādir yadi sthitaḥ visargāt kṣaparād ūrdhvam ubhayatrārdha-mātrikaḥ.*

Com.: *yathā utpūtá, atrokāra-takārayor madhye virāmo 'rdha-mātrākālaḥ.*

[5] Cf. the verses on the various kinds of Svarabhakti quoted by the Tribhāṣyaratna on Taitt. Prāt., XXI. 5; Franke's edition, p. 22.

Again, cf. II. 3: *kutracit svarayor madhye dvitaṃ lakṣyānusārataḥ, pūrvāgamas tathā tatra jñeyo varṇa-vicakṣaṇaiḥ*, quoted both by the Tribhāṣyaratna and the Vaidikābharaṇa on Taitt. Prāt., XIV. 6.

[6] *ādyudāttāni vākyāni caika-dvi-tryādi-saṃkhyayā, vividhāni tu vṛndāni vispaṣṭāny atra kṛtsnaśaḥ.* 2.

is admittedly[1] a more recent work, for it speaks of itself as "nectar extracted from the ocean of the nine Śikṣās."

(*c*) The third and last secondary Śikṣā mentioned is the Siddhānta Śikṣā, MS. No. 1012. The designation is a misnomer, for the treatise does not deal with the general principles of phonetics. Its treatment is entirely empirical; it is prepared on the same lines as the Bhāradvāja Śikṣā, giving lists of words containing different sounds in alphabetical order—e.g., in *kamiṣyante, lokam,* etc.[2] The only point of some interest is the view (see p. 153) that "*tvam*" is optionally pronounced *tvaṅ* in the Vedas.

Nevertheless, the place of this Śikṣā in the chronology of Indian phonetic literature is of some importance. The author,[3] who is said to have compiled both the Śikṣā and the commentary, not only enumerates the nine primary Śikṣās described above, but also mentions the commentaries Tribhāṣyaratna[4] and the Vaidikābharaṇa, as well as the authors Bhaṭṭa Bhāskara Miśra and Gaṅgeśa. Now Bhaṭṭa Bhāskara Miśra, according to Burnell,[5] lived about 950-1000 A.D., while the date of Gaṅgeśa, according to Keith,[6] is 1150-1200 A.D. Moreover, considering the fact that it quotes all the primary Śikṣās, including the Vyāsa Śik., it must be a more recent work than the above authors. But in view of the fact that it still esteems Bhaṭṭa Bhāskara's commentary on the Taitt. Saṃhitā as *the bhāṣya*, it was composed perhaps not much after Sāyaṇa's commentary came into prominence.

1 Introductory verse, last two lines:

. . . .

kṣiti-sura-gaṇa-hetor etadāraṇya-śikṣā-
mṛtam iva nava-śikṣā-vāridher uddharāmi.

2 *kakārādiḥ kamiṣyante syād amuṃ lokam uttaraḥ*
kaṭa-dhātoḥ kaḍ ity āhur aśvibhyāṃ paritaḥ kṛtam. 45.

3 Cf. colophon: *śrīnivāsādhvarīndreṇa catuṣkula-sudhāṃśunā ślokāḥ siddhānta-śikṣāyāṃ catuḥsaptatir īritāḥ śrīnivāsādhvarīndra-viracitā siddhānta-śikṣā-vyākhyā samāptā.*

4 Verse 2: *pūrva-śabdān parāmṛśya prātiśākhyaṃ ca sarvaśaḥ siddhānta-śikṣāṃ vakṣyāmi veda-bhāṣyānusāriṇīm.*

Com.: . . . *tribhāṣyaratnair vaidikābharaṇādi-vyākhyānapuraḥsaratayā kṛtaṃ prātiśākhyaṃ ca parāmṛśya vedabhāṣyānusāriṇīṃ bhaṭṭa-bhāskarādi-śodhana-janyatayā viśvasanīyāṃ . . . siddhānta-śikṣāṃ vakṣyāmi.*

5 Index to Skr. MSS. at Tanjore, p. 7.

6 "Indian Logic," p. 33. Gaṅgeśa is mentioned under verse 7: *ānvīkṣikīṃ parama-kāruṇiko praṇināyeti Gaṅgeśaḥ.*

The lower limit of its date was therefore the fifteenth century A.D., about a century later[1] than Sāyaṇa. The commentaries Tribhāṣyaratna and the Vaidikābharaṇa should therefore have been presumably composed before the fifteenth century A.D.

But Śikṣās much more valuable than some of the above have now been discovered. Three of these, all Madras MSS., may be described:

1. The Āpiśali Śikṣā, MS. No. 864, is mostly devoted to articulation. The name of Āpiśali as a grammarian anterior to Pāṇini has been pointed out by Burnell,[2] while the Vaidikābharaṇa[3] quotes the Śikṣā by name, and the passage quoted has been identified by me in the Śikṣā, with a slight variation of reading. The Āpiśali Śik., then, should be earlier than the Siddhānta Śik., which, as shown above, mentions the Vaidikābharaṇa. Moreover, as suggested above (see p. 10), this Śikṣā possibly suggested to Kaiyyaṭa the eleven kinds of "external effort," as in no other Śikṣā have these phases of "external effort" been described. If this was a fact, the lower limit of its date may be earlier than the eleventh century A.D., being the probable date[4] of Kaiyyaṭa.

But it is possible to push back its date even further. For Rāja Śekhara (circa 937-1077) in his Kāvya Mīmāṃsā actually names this Śikṣā, as Bhagvad Datta[5] has pointed out. The probable lower limit of its date may therefore be assumed as the ninth century A.D.

The upper limit of its date, however, cannot be pushed back very far, as in an introductory verse it describes its object[6] to be "the fixation of data relating to Vedic texts as prescribed by Śikṣā and Grammar, without conflicting with the Prātiśākhyas." The work, though in substance the authorship of "the sage Āpiśali,"[7] possibly underwent further changes in course of time.

[1] Burnell: Vaṃśabrāhmaṇa, pp. vi ff.

[2] "Aindra School of Grammarians," pp. 1, 36.

[3] On Taitt. Prāt., II. 47: *śeṣāḥ sthāna-karaṇā ity āpiśala-śikṣā vacanāt.* The actual reading in my transcript of the MS. is: (*jihvāgreṇa dantyānāṃ*) *śeṣāḥ svasthāna-karaṇyāḥ.* 24. As this Sūtra occurs also in Candra's Grammar (18), the possibility of a borrowing on the part of either of these works is a matter for further investigation.

[4] Belvalkar, "Systems of Skr. Grammar," p. 41.

[5] *Māṇḍūkī Śik.*, p. 6.

[6] *tasmāt tat-tat-samāmnāye prātiśākhyāvirodhataḥ, kāryaṃ sarvaṃ vyavasthāpyaṃ śikṣā-vyākaraṇoditam.* 5.

[7] *atha śikṣāṃ pravakṣyāmi matam āpiśaler muneḥ* 1a.

2. A much more interesting Śikṣā is the Kālanirṇaya (on Quantity), which had come to the notice of Whitney[1] and Lüders,[2] but they could not trace it out. It has now been discovered in Madras, and copies of two MSS. (Nos. 891, 892) have been sent to me. Its observations on quantity will be discussed in Chapter XI. As regards its date, Burnell[3] suggested the fourteenth century, and thought it was probably a work of Sāyaṇa. But as the Vyāsa Śik. has borrowed a portion from this Śik.,[4] it should be earlier than the thirteenth century, the date of the Vyāsa Śik. As regards the upper limit of its date, no particular data are available; but the work is evidently posterior to the Prātiśākhyas, for in the introductory verse the author says, "After studying, according to my lights, the Śāstras like the Prātiśākhyas, etc., I proceed to describe quantity, for the comprehension of Vedic truth."[5]

Several verses quoted by the Tribhāṣyaratna and the Vaidikābharaṇa can be traced out in the Śikṣā. Thus the one quoted by the former on Taitt. Prāt., XVIII. 1, is the nineteenth verse of this sikṣā;[6] another cited on the same Sūtra is its sixteenth verse;[7] while the one quoted by the Vaidikābharaṇa on Taitt. Prāt., I. 37, regarding the quantity of a final *l* is its eleventh verse.[8] Its commentary is named the Kāla-nirṇaya Dīpikā, the commentator's name being Muktīśvarācārya. He combats Patañjali's view—or, rather, what seemed to him to be his view—that there was a "pause" between two individual sounds (see p. 186).

3. But even more interesting than the above is the Pāriśikṣā, MS. No. 924. It is a complete Śikṣā, with a lucid commentary. The striking observations of this Śikṣā on doubling, quantity, and accent will be noticed in Chapters V., XI., and X. The commentary gives us the definition of the syllable (see p. 55). But in the case of this work, both the name and the date are a riddle. As regards the title of the book, what was meant by Pāri? Aufrecht, in his *Catalogus Catalo-*

1 Taitt. Prāt., p. 355.
2 Vyāsa Śik., pp. 110, 111.
3 "Aindra School of Grammarians," p. 49.
4 Lüders, Ibid., *op cit.*

5 *prātiśākhyādi-śāstrāṇi mayā vīkṣya yathāmati, veda-tatvāvabodhārtham iha kālo nirūpyate.*

6 *svādhyāyārambhaśeṣasya praṇavasya svarasya ca adhyāyasyānuvākasyānte syād ardha-tṛtīyatā.*

7 *sandhyakṣarāṇāṃ vedaṃ ca praṇavaṃ cāntarā tathā.*

8 *avasāne lakārasya tripādatvaṃ sadā bhavet.*

gorum, suggests that Pāriśikṣā might be Pārāśarī Śikṣā. But the difficulty of accepting this suggestion is that the text of this Śikṣā has very little similarity with that of the Pārāśarī Śikṣā. And then there is the phonetic difficulty of the change of a whole word Pārāśarī into Pāri, with a short final. The commentator on this Śikṣā, however, suggests that Pāri was the name of a sage. He thus describes the purpose of this Śikṣā: " The author follows the works on phonetics, etc., composed by the sages Bhāradvāja, Vyāsa, PĀRI, Śambhu, Kauhala, Hārita, Bodhāyana, Vāsiṣṭha, Vālmīki, etc., incomprehensible to people of modern times."[1] It will be noticed that eight out of the nine names quoted in this list are exactly those enumerated above by the Vedalakṣaṇānukramaṇikā among the nine authors of the primary Śikṣās. The ninth author given by our commentator is Pāri, while the one mentioned by the Anukramaṇikā is Pāṇini. It may be supposed, then, that " Pāri " was a clerical error for " Pāṇini." But this supposition vanishes when we note that the commentator even in verse[2] calls the work the " Pāriśikṣā." Nor is the name Pāri to be met with elsewhere in Sanskrit. It cannot be the name of the author, for he definitely gives his name as "Cakra."[3] Perhaps the author first thought of " Pariśikṣā," " a '*Rundschau*' " on Śikṣā (though even this would be an unsatisfactory term), and then coined an attributive designation for a work relating to a survey of Śikṣā as a subject.

As regards Cakra, his style and metre indicate that he is a comparatively recent poet. He does not mention any locality, but presumably belongs to the south. A poet of this name is said to be the author of "Citra-ratnākarakāvya" and "Citra-praśnottara-ratnā-

[1] Introductory lines to verse 3:

sāmpratika-jana-duravabodha-bhāradvāja-vyāsa-pāri-śambhu-kauhala-hārīta bodhāyana-vāsiṣṭha-vālmīki prabhṛti-munigaṇa-vinirmita-śikṣādi-granthānusāreṇa . . . pratijānīte.

[2] *satāṃ mudaṃ samprati pāriśikṣā—*
vyākhyāna-bhūtā hṛdayaṅgameyam
vilakṣaṇā yājuṣabhūṣaṇākhyā
kṛtir madīyā vitanotu kāmam. 4.

[3] *tanayo vinayojjvalasya tasya*
prathito vaidika-vāvadūka-siṃhaḥ,
kṛpayā mahatāṃ sa cakra-nāmā
hy api varṇa-krama-lakṣaṇaṃ karoti. 3.

vali,"[1] but it is difficult to tell whether the author of the Śikṣā and of these works was one and the same person.

As regards its date, the Pāriśikṣā was earlier than the Siddhānta Śikṣā, for it is quoted both by the Tribhāṣyaratna[2] and the Vaidikābharaṇa,[3] both of which have been mentioned by the Siddhānta Śikṣā. The lower limit for the date of its composition may be assigned to the fifteenth century, the probable date of the Siddhānta Śikṣā.

The above is an attempt to construct a crude relative chronology of the Taitt. Śikṣās from the meagre data available. But it is necessary to mention in this connection a work which has not been sufficiently brought to the notice of modern scholars—viz., the Vaidikābharaṇa.[4] It is an illuminating work on the Śikṣās in general and the Taitt. Prāt. in particular. It not only quotes many of the extant Śikṣās of the Taitt. school, as shown above; it also cites possibly several more Śikṣās which still remain to be discovered. On advanced subjects like quantity, accent, etc., peculiar to the Śikṣās, its data are particularly valuable, and will be examined in due course.

But its chronology is obscure, as usual. The only data given by the author about himself are his own name,[5] Gārgya Gopāla Yajvan, the name of his work, the Vaidikābharaṇa, and another work—viz., *Svarasampad.*[6] Burnell[7] mentions another treatise by the same author—viz., the Pitṛmedha-bhāṣya—in the beginning of which he merely mentions his name. There is said to be another[8] work by the same author—viz., the *jñānadīpa*, a commentary on the Vṛttaratnākara—in which he quotes Śrīnātha, who, according to Raṅgācārya, must have lived after the eleventh century, as he quotes the author of

[1] Aufrecht, *Catalogus Catalogorum.*

[2] On Taitt. Prāt., XXI. 1:

> *yaḥ svayaṃ rājate taṃ tu svayam āha Patañjaliḥ*
> *upari sthāyinā tena vyaṅgyaṃ vyañjanam ucyate.*

It is verse 12 in the Pāriśikṣā.

[3] On Taitt. Prāt. I. 2:

> *anvarthaṃ mahāsaṃjñā vyañjayanty arthāntarāṇi ca*
> *pūrvācāryair atas tās tu sūtrakāreṇa cāśritāḥ.*

It is verse 9 in the Pāriśikṣā.

[4] Published in the Mysore Government Oriental Library Series, 1907 (Taitt. Prāt.).

[5] On Taitt. Prāt., I. 1.

[6] On Taitt. Prāt., XIV. 29.

[7] Index to Skr. MSS. at Tanjore, p. 16.

[8] Raṅgācārya, " Introduction to the Taitt. Prāt." (Mysore), pp. 18-19.

the Vaijayanti (circa the eleventh century). But we need not look for an upper limit as early as the eleventh or the twelfth century, for it has been shown above that the author quotes the Pāriśikṣā, although he is cited by the Siddhānta Śikṣā. His probable date is therefore circa fourteenth to fifteenth century A.D.

As regards the Sāma Veda, three Śikṣās may be mentioned:

1. The Nārada Śikṣā is one of the oldest and the most profound Śikṣās. It states its object to be "the treatment of accents in the Sāma Veda."[1] This is corroborated by the nature of the text, which,[2] from pp. 394 to 428 describes accent and its relation to musical notes; then there occurs a break of three pages in which other subjects of phonetics, as doubling, syllabication, etc., are dealt with (428-31); accent is resumed on pp. 431-32. Again, there is a break of nine pages on extraneous subjects; and accent is again resumed from p. 440. These two breaks in the treatise seem to be interpolations which were inserted later in order to make it a complete Śikṣā.

As regards its chronology, the treatise is silent about itself, except that its authorship has been attributed to Nārada.[3] We have, therefore, to depend upon external evidence for its date. A quotation from it, in which a vowel is compared to a supreme monarch, occurs in the Tribhāṣyaratna.[4] But works considerably earlier seem to refer to it. Thus in the Saṁgīta Ratnākara (circa thirteenth century[5]), Nārada has been mentioned as the author of the Gāndhāra-grāma, the third musical gamut, and it states in this connection that there are only two grāmas (musical gamuts) on earth—viz., the Ṣaḍja-grāma and the Madhyamagrāma; the third—viz., the Gāndhāra-grāma, which it attributes to Nārada[6]—"is current only in paradise, and not on earth."

[1] ŚS, p. 398:

sāmavede tu vakṣyāmi svarāṇāṃ caritaṃ yathā,
alpa-granthaṃ prabhūtārthaṃ śravyaṃ vedāṅgam uttamam.

[2] The text referred to occurs in ŚS.

[3] ŚS, p. 398: *śikṣām āhur dvijātīnām ṛg-yajuḥ-sāma-lakṣaṇam, nāradīyam śeṣena niruktam anupūrvaśaḥ.*

[4] On Taitt. Prāt., XXI. 1 (see p. 56).

[5] Clements, "Introduction to the Study of Indian Music," p. 46; R. Simon, "Zur Chronologie der Indischen Musikliteratur," p. 154.

[6] I. 4:

grāmaḥ svara-sumūhaḥ syān mūrcchanādeḥ samāśrayaḥ
tau dvau dharātale tatra yat ṣaḍjagrāma ādimaḥ.

. . . .

gāndhāra-grāmam ācaṣṭe tadā taṃ nārado muniḥ,
pravartate svarga-loke grāmo' sau na mahītale.

Now precisely these three grāmas, including the Gāndhāra-grāma, have been taught in the Nārada Śikṣā,[1] and there it also explicitly states as the opinion of Nārada that "the Gāndhāra-grāma does not exist anywhere else except in paradise." Again, the Saṁgīta Ratnākara, in another verse,[2] states concerning modulations (*mūrcchanā*) that "Nārada has given other names for them—viz., *uttara-mandrā*, *udgatā*, *aśvakrāntā*, *sauverī*, *hṛṣyakā*, and *uttarāyatā*"—terms which precisely occur in the Nārada Śikṣā.[3] It is probable, therefore, that the author here actually refers to the Nārada Śik. But if this is a fact, the lower limit of its date may be pushed back several centuries before the Saṁgīta Ratnākara, for these terms for modulations attributed to Nārada also occur in Bharata's Nāṭya Śāstra,[4] and if this tradition regarding Nārada's authorship of these verses was correct, the lower limit for the date of the kernel of this Śikṣā was possibly the fifth century A.D., being the probable date of Bharata's Nāṭya Śāstra.[5]

But while our treatise seems to be one of the oldest of the Śikṣās, its chronology cannot be pushed back so early as to precede even the Prātiśākhyas, for it quotes authorities,[6] as Tumburu and Viśvāvasu, who have been mentioned in later or contemporary works, as the Mahābhārata.[7] It seems to be posterior both to the Vaṃśa Brāhmaṇa

[1] ŚS, p. 399: *ṣaḍja-madhyama-gāndhārās trayo grāmāḥ prakīrtitāḥ, bhūr-lokāj jāyate ṣaḍjo bhuvar-lokāc ca madhyamaḥ svargān nānyatra gāndhāro nāradasya matam yathā.*

[2] I. 4, 22, 23:

tāsām anyāni nāmāni nārado munir abravīt,
mūrcchanottara-mandrādyā ṣaḍjagrāme' bhirudgatā,
aśvakrāntā ca sauverī hṛṣyakā cottarāyatā,
rajanīti samākhyātā ṛṣīṇām sapta mūrcchanāḥ.

[3] ŚS, p. 400: *ṣaḍje tūttaramandrā syād ṛṣabhe cābhirudgatā, aśva-krāntā ca gāndhāre tṛtīyā mūrcchanā smṛtā, madhyame khalu sauvīrā hṛṣyakā pañcame svare, dhaivate cāpi vijñeyā mūrcchanā tūttarāyatā.*

[4] XXVIII. 30-31:

ādav uttaramandrā syād rajanī cottarāyatā,
caturthī śuddha-ṣaḍjā ca pañcamī matsarī kṛtā,
aśvakrāntā tathā ṣaṣṭhī saptamī cābhirudgatā,
ṣaḍja-grāmāśritā hy etā vijñeyā sapta mūrcchanāḥ.

[5] Winternitz, "Gesch. d. Ind. Litt.," p. 9.

[6] ŚS, p. 442: *tumburu-nārada-vasiṣṭha-viśvāvasvādayaś ca gandharvāḥ.*

[7] St. Peters. Lexicon. Viśvāvasu occurs as an author of a hymn in the Ṛgveda (X. 139), but as a Gandharva (in which position it occurs in the Nārada Śik.) it occurs more frequently in the Mahābhārata.

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and the Sāmavidhāna Brāhmaṇa. It refers to an authority Audabraji[1] mentioned in the former work, while it follows the latter in its description of the various kinds of music prevalent among the different scales of creation.[2]

2. The Lomaśī Śik. makes general but concise observations on doubling. It also refers to Tumburu,[3] quoting his opinion on the regulation of exhalation and inhalation during Sāma chants. But as regards its chronology, even its authorship is puzzling. The title of the Śikṣā suggests that its author was a person named Lomaśa. But in its first verse it is stated that the Śik. was "thought out by Gargācārya."[4] How can the title "Lomaśī" be connected with Gargācārya? Now a MS. work,[5] the Jātakapaddhati, enumerates a list of authorities on Astronomy among whom Garga and Romaśa (along with Vyāsa, Vasiṣṭha, etc.) have been mentioned. If the Śikṣā was planned by Garga, may it be supposed that it was executed by another man in the same line—viz., Romaśa or Lomaśa? Or is the Śikṣā, being a work on phonetics, called Lomaśī or Romaśī after Romaśā, the goddess of speech, mentioned as a daughter of Bṛhaspati in the Bṛhad Devatā?[6] The connection of Garga with the Sāmaveda, however, may be suggested by "Gārgya," said to be one of the thirteen teachers of the Sāma Veda,[7] possibly the traditional author of the Pada Pāṭha of the Sāma Veda. But the question of the Śikṣā's authorship and its chronology is still shrouded in mystery.

The Śikṣā recommends the pronunciation of Svarabhakti as *a*, which represents a geographical area to which Ardhamāgadhī and Apabhraṃśa belonged (cf. p. 136).

[1] ŚS, p. 443: *varṇāṃś ca kurute samyak prācīnaudbrajir yathā.*

Cf. Vaṃśa Brahmaṇa, III. 4: *puṣya-yaśā audavrajiḥ.*

[2] ŚS, p. 419: *kruṣṭena devā jīvanti prathamena tu mānuṣāḥ paśavas tu dvitīyena gandharvāpsarasas tv anu.*

Cf. Sām. Brāhm., I. 8: *tadyo 'sau kruṣṭatama iva sāmnaḥ svaras taṃ devā upajīvanti yo 'vareṣāṃ prathamas taṃ manuṣyāh*, etc.

[3] ŚS, p. 461: *dakṣiṇo niḥsṛtaḥ prāṇo (a) pānas tv anyathā bhavet savyaṃ pītvāpānasya tumburasya mataṃ yathā.*

[4] ŚS, p. 456: *lomaśanyāṃ pravakṣyāmi gargācāryeṇa cintitām.*

[5] Madras MSS. Catalogue, 1913.

No. 374, colophon: *romaśaḥ paulaśaś caiva cyavano yavano bhṛguḥ, śaunako 'ṣṭādaśa hy ete jyotiḥ-śāstra-pravarttakāḥ.*

[6] III. 156: *prādāt sutāṃ romaśāṃ nāma nāmnā, bṛhaspatir bhāvayavyāya rājñe.*

[7] Commentary on the Caraṇavyūha (Benares), p. 47: *āsāṃ śākhānām adhyāpakācāryās trayodaśa-saṃkhyākāḥ . . . dārālo gārgyaḥ sāvarṇiḥ . . .*, etc.

3. The Gautamī Śik. is ascribed to Gautama, probably in honour of the authority who, according to the Ārṣeya Brāhmaṇa,[1] was the seer of the first Sāma. It manifests a close study of doubling and consonant-groups, and says, "Gautama has declared that there exists no consonant-group with more than seven consonants."[2]

It refers to a "Prātiśākhya" in which a consonant-group *(yu)ṅṅkṣkṣv* is said to occur, but no such group can be traced in any of the extant Prātiśākhyas.[3] This may suggest that it was posterior to some extinct Prātiśākhyas, but the question of its chronology remains absolutely unsolved.

The Śikṣā belonging to the Atharva Veda is the Māṇḍūkī, but, although connected with the Atharva Veda, owing to the copious number of quotations[4] from that Veda occurring therein, it is particularly interested in accent common to all the Vedas, especially the Sāma Veda, and seems to have further developed the teachings of the Nārada Śik. on accent. Thus it speaks of the seven musical notes in the Sāma chants,[5] of the necessity of moving the hand in the Ṛg, the Yajus and the Sāma recitations,[6] and of the opinion, attributed to Maṇḍūka, that the first two and the last two notes of the musical scale are sung in the Vedas.[7] The Nārada Śik. on this point gives nothing that may be common to all the Vedas; it has only specified the kinds of musical notes confined to each particular Veda.[8] Again, verses 8-12, describing the nature of notes in the musical scale, seem to be the same as those given in the Nārada Śik.,[9] slightly modified.

[1] Cf. the opening line of this Brāhmaṇa:

gautamasya parkau.

According to Caraṇavyūha (Benares, p. 45), Gautamī was one of the nine subdivisions of the Rāṇāyanīya school.

[2] Cf. p. 111.

[3] It is possible, as Professor R. Simon in a private communication suggests to me, that this unwieldy consonant-group was the transcription of a musical phenomenon in the Sāma Veda *gānas*, though there are no indications of such consonant-groups in the *gānas*; *yuṅkṣvā*, e.g., is written in the *gānas* as *yū³ ˋṅksvā* (Sāma Veda, B. I. Edition, I. 1, 3, 5).

[4] Traced by Bhagvad Datta, in the index to his edition of the Māṇḍūki Śik., 1921.

[5] Verse 7, ŚS: *sapta svarās tu gīyante sāmabhiḥ sāmagair budhaiḥ.*

[6] 32*b*, Ibid.: *ṛg-yajuḥ-sāmagādīni hasta-hīnāni yaḥ paṭhet.*

[7] Verse 17: *prathamāv antimau caiva varttante chandasi svarāḥ, trayo madhyā nivarttante maṇḍūkasya matam yathā.*

[8] Cf. ŚS, pp. 397-398.

[9] Cf. ŚS, pp. 407-408

As regards its date, then, its upper limit may be assumed as the fifth century A.D., the probable date of the kernel of the Nārada Śik., but it seems to be much later than that date. For it contains a good deal of material common to some of the Śikṣās of the White Yajur Veda—e.g., pronunciation of *y* and *v* in different positions (verse 87), the reference to the woman of Surāṣṭra pronouncing the nasal sound *raṅga* (verse 112), etc.—and so is either contemporary with, or posterior to, the Yājñ. Śik., circa the tenth century A.D.

The above chronology of the Śikṣās has been determined from the standpoint of the *form* in which we possess them at present, and it has been shown that the latest of the Śikṣās belong to a period as late as the twelfth to the fifteenth century A.D. But this does not necessarily indicate that the *matter* of these Śikṣās is also an equally recent production. If some of them were composed during the medieval period, a considerable portion of their material was most probably a traditional record of phonetic observations of much earlier ages. For it is hardly likely that many of the opinions—as on abhinidhāna in the Cār. Śik., and on the divergent pronunciations of *y* and *v* in several Śikṣās (see pp. 128 ff.)—record contemporary pronunciation of spoken Sanskrit. The pronunciation in question belonged to a much earlier, transitional stage, which is confirmed by the development of the middle and the modern Indian languages. The motive for the injunction of the older pronunciation was in several cases—e.g., when the Cār. Śik. said that consonants in Sandhi were always to be doubled—conservative, to guard the traditional pronunciation against provincialism. Moreover, the fact that nearly all the Śikṣās have been composed in a metrical style suggests the possibility of earlier works in the Sūtra or prose style, of which the Śikṣās were popular compendiums for ready reference. Nevertheless, there is nothing against the supposition that even in the medieval period some portion of the Śikṣā literature was an original contribution. When, for instance, the Śikṣās offered various details on Svarabhakti after the Svarita accent (see pp. 84 ff.), the authors presumably refer to their own pronunciation of these sounds.

Geographical Data.

While the chronological material of Indian phonetic literature is poor, its geographical data are hopelessly meagre. In the whole domain of this literature of fifty-five books examined by me, only five geo-

graphical names have been mentioned: (1) Surāṣtra, a stock-example of many Śikṣās, so that we cannot specify the original source with which the place may be connected; (2) Puṣkara (cf. p. 33), a holy place of pilgrimage mentioned by the Pārāśarī Śik.; (3-5) the Yamunā (Kālindī), the Ganges, and Sarasvatī mentioned by the Yājñ. Śik.[1] These four places of pilgrimage, so commonly connected with all parts of India, could be mentioned by anybody, however distant he may actually have been from those places.

Variations of pronunciations mentioned in the following pages, however, may help us to construct a number of hypothetical geographical data of primitive and middle Indian as observed in Śikṣā literature—a subject for further investigation. The following lines for the construction of these hypothetical isoglosses of the future may be provisionally suggested:

1. Pronunciation of *r* and *ṛ* mentioned as dental or alveolar by the Prātiśākhyas, but cerebral by the Pāṇ. and the Āpiśali Śikṣās, may suggest the former's connection with the western, and the latter's with the eastern, dialects.[2]

2. The Taitt. Prāt.'s view of the Yamas as belonging to the succeeding syllable (nasalization being weaker in this case) and that of the Vāj. Prāt. as belonging to the preceding syllable may connect the former with the Ardhamāgadhī-speaking areas, and the latter with the other areas.[3]

3. The Taitt. Prāt.'s rule[4] regarding the insertion of a plosive between a fricative and a nasal consonant may connect the pronunciation with the Aśokan Central (or Magadhan) dialect.

4. The prescription of the Lomaśī Śik. regarding the pronunciation of Svarabhakti[5] as *a* may connect it with areas to which Mahārāṣṭrī and Ardhamāgadhī belonged, and the Yājñ. and the Māṇḍūkī, which prescribed it as *i*, with the other areas.

5. The Vāj. Prāt.'s prescription[6] of pronouncing intervocalic *j* as *y* (so that *ajá-* was to be pronounced *ayá-*) may connect it with the western dialects.

6. The rules[7] of the Śikṣās of the White Yajur Veda regarding the

[1] ŚS, pp. 4-5: *kālindī saṃhitā jñeyā padayuktā sarasvatī, krameṇāvartayed gaṅgā śambhor bāṇī tu nānyathā.*

[2] Cf. p. 9. [3] Cf. p. 79. [4] Cf. p. 125. [5] Cf. p. 136.

[6] IV. 164: *svarāt svare pare samānapade jo yaṃ na tu ṛkāre.*

[7] Cf. Chapter VI.

pronunciation of *y* and *v* in certain positions may connect them with Madhyadeśa—the Śaurasenī-speaking area.

7. Similarly, the Vāj. Prāt.'s prescription[1] that the cerebral *ḷ* and *ḷh*, the Jihvāmūlīya and the Upadhmānīya did not exist among the Mādhyandinas may suggest that the above-mentioned area was meant.

[1] VIII. 29: *tasmin ḷ ḷh-jihvāmūlīya-nāsikyā na santi mādhyandinām.*

CHAPTER I

The Syllable

The most usual term used in Sanskrit works for the syllable is *akṣara*, which the Pāriśikṣāṭīkā Yājuṣabhūṣaṇa[1] explains as that which does not move as an adjunct to another: in other words, which stands alone.

The essential element of the syllable was said to be the vowel. For a consonant, according to the statement of the Tribhāṣyaratna,[2] cannot stand by itself; it is dependent, while the vowel is independent. There is no doubt, says the same authority, that a consonant has an existence of its own. For, firstly, meanings of words change with consonants—e.g., in the words *kūpa-* and *yūpa-* the vowels are the same, but the consonants are different, and so the meanings of these words differ. And, secondly, the articulation of a consonant takes some *time*,[3] which, according to Indian grammarians, was equal to half the time taken by a short vowel—i.e., half a mora. It was only in quick speech that the duration of a consonant was merged in that of a vowel. In intermediate and slow speech, however, says the Vaidikābharaṇa, a consonant does distinctly preserve its quantity, though in quick speech its quantity is not distinctly perceived, just as in a mixture of milk and water it is only the milk that is distinctly perceived.

A consonant, then, according to the Indian grammarian, is not absolutely dependent upon the vowel. And yet, as the Nārada Śikṣā[4] points out, consonants are like pearls in a necklace, but the thread which supports them is the vowels. Consonants, according to Patañ-

[1] MS. No. 924, Madras; v. 9. Also the Vaidikābharaṇa on the Taitt. Prāt., I. 2: *na kṣarantīty akṣarāṇi kṣaraṇam anyāṅgatayā calanam.*

[2] *nanu kūpo yūpa ityādau vyañjanam evārthaviśeṣabodhakam iti svaro vyañjanāṃgaṃ kiṃ na syāt? vyañjanaṃ kevalam avasthātuṃ na śaknoti kintu sāpekṣam; svaras tu nirapekṣaḥ.* Taitt. Prāt., XXI. 1.

[3] *svarasaṃsṛṣṭasya vyañjanasya svarakāla ekakālo drutavṛttau na tu sarvatrety arthaḥ.* Vaidikābharaṇa on Taitt. Prāt., XXI. 1.

[4] *svarapradhānaṃ traisvaryam ācāryāḥ pratijānate, maṇivad vyañjanaṃ vidyāt sūtravac ca svaraṃ viduḥ.* ŚS, p. 436.

jali,[1] share, in a sense, in the accent of vowels. For, says Patañjali, although accent is not a quality of the consonant, it is the quality of the vowel; yet by proximity to the vowel, the consonant also acquires this quality of the vowel, just as a piece of white cloth between two red pieces of cloth acquires their colour, or just as a pot acquires luminous power by the light of the lamp. The accentuation of a vowel can be perceived without the presence of a consonant, but, says Patañjali, without a vowel a consonant cannot even be pronounced. The Sanskrit word for the vowel, *svara*, has been derived by Patañjali as *sva-ra*, which literally means ' self-ruling ' (*svayaṃ rājate*),[2] while the Nārada Śikṣā compares the vowel to a powerful monarch and the consonant to a weak king, the latter submitting to the force of the former.[3]

The vocalic basis of the syllable, maintained by Indian grammarians, was on the whole sound. There is no doubt that even a consonant, if pronounced with sufficient prominence, may become an independent syllable. For the basis of a syllable is prominence, not mere sonority. This prominence has three elements—viz., length, breath-force, and sonority. A consonant has, indeed, less sonority than a vowel has, but if one or both of the other two elements—viz., length and breath-force—are particularly strong in its articulation, the consonant may be prominent enough to form an independent syllable. Thus in Japanese *S* in *arimaṢ* (' is ' or ' are '), *ṡ* in *ṣ̩ka* (' deer '), *k* in *k̩r̥a* (' grass '), and *m* in *m̩a* (' horse ') are independent syllables, as they are pronounced with unusually great prominence of breath-force and length. Similarly in English *l* in *funnel*, *n* in *mutton* are independent syllables. And in colloquial rapid speech in German *n* in *wir könn*(*en*) and *m* in *wir komm*(*en*) are independent syllables.[4] A consonant may, then, occasionally become an independent syllable. Nevertheless, a vowel is a more important basis of syllabication than a consonant is. For in actual speech the element of sonority is more predominant than those of length and breath-force in constituting the

[1] *naite (anudāttādayaḥ) vyañjanasya guṇāḥ, aca ete guṇās tatsāmīpyāt tu vyañjanam api tadguṇam upalabhyate tad yathā dvayo raktayor vastrayor madhye śuklaṃ vastraṃ tadguṇam upalabhyate.* On Pāṇini, I. 2, 29. Kielhorn's Ed., 1880, Vol. I., p. 206.

[2] *svayaṃ rājante svarā anvag bhavati vyañjanam iti.* Ibid., p. 206.

[3] *durbalasya yathā rāṣṭraṃ harate balavān nṛpaḥ, durbalaṃ vyañjanaṃ tadvad harate balavān svaraḥ.* ŚS, p. 436.

[4] I owe the above examples to Miss Armstrong, of University College, London.

prominence of a sound, and the vowel being more sonorous than a consonant, tends therefore to possess greater prominence than a consonant. Hence the more sonorous sounds—viz., vowels—rightly appeared to Indian grammarians as convenient bases of syllabic division.[1]

But if our grammarians implied that a vowel was absolutely the essence of a syllable, they were evidently wrong, for it is now an established fact that a consonant or a group of consonants can form an independent syllable (cf. the examples given above). The language of Indian grammarians in this connection implies that they did not dogmatically maintain the vocalic basis of the syllable in the absolute sense, for they speak of the vowel as a more powerful monarch and of the consonant as a weaker king. But it is evident that they were inclined on the absolute side. Moreover, it did not definitely occur to them as a general principle that a consonant or a group of consonants could form an independent syllable. There is no doubt that the syllabic nature of *r* and *l* did strike the Indian phoneticians, but even here it was in the form of vowels that *l* and *r* appeared to them as constituting independent syllables. Thus according to the Bhāradvāja Śikṣā *l* was never a vowel in the beginning or at the end of a word, but it was vocalic in the medial position, as in the word *kḷpta-*.[2] Again, the Svaravyañjana Śikṣā is exclusively devoted to the question when *r* is a consonant and when it is a vowel; for details see Appendix A.

In the light of the above facts, however, it seems to me probable that the Indian terms *Svara* and *Vyañjana* did not exactly correspond to the "vowel" and the "consonant" of modern phonetics. The Indian terms may have denoted "a syllabic sound" and a "non-syllabic sound" respectively. For the essential difference between *Svara* and *Vyañjana* lay in their relative dependence. The *Svara* was said to be "self-dependent," while the *Vyañjana* (literal meaning 'manifested by another,'[3] 'accessory') was dependent upon the *Svara*. So when the consonants *l* and *r*, and sometimes even *ṃ* (according to the Sarvasammata Śikṣā, as a

[1] Cf. Meillet, "Langues indo-europeennes" (3rd Edition, p. 106): "The vowel belongs entirely to the syllable of which it is the centre."

[2] *udāhṛtaḥ kḷptaśabdo na padādyantayoḥ svaraḥ*. 34 (Sieg's Edition).

[3] Cf. the explanation of the Vaidikābharaṇa on Taitt. Prāt., I. 6: "*pareṇa svareṇa vyajyata iti vjañjanam.*" This sense of the suffix *ana* is here possible; cf. Böhtlingk on Pāṇini, III. 3, 113.

subsequent discussion will show: cf. p. 82), were noticed as being independent sounds and were designated as *Svara*, the general principle that a consonant could also form an independent syllable may have been recognized by Indian grammarians if they actually meant by *Svara* "a syllabic sound," and not necessarily "a voiced sound accompanied by a free passage of air through the mouth, and not producing audible friction,"[1] which the modern term "vowel" signifies.

Appendix A.

The Svaravyañjana Śikṣā on "r" as a Consonant and "ṛ" as a Vowel.

The Svaravyañjana Śikṣā is a short treatise of about three pages. It is MS. No. 21 of 1875-76, belonging to the Bhandarkar Oriental Research Institute, Poona. The MS. is unfortunately corrupt and mutilated, and I have not been able to secure another copy of it anywhere else.

The object of the work is to show when *r* is a consonant and when it is a vowel. The work follows the Ṛg Prāt., for it not only quotes in full two verses from it (IV. 8-9), but also uses throughout the terminology of this Prātiśākhya, such as various terms of Sandhi, *niyata*, *bhugna*, *kṣaipra* (Ṛg Prāt., II. 8), *anuloma sandhi* (Ṛg Prāt., II. 3), etc. The work is post-Pāṇineyan, for it quotes Pāṇini, VII. 4, 28 and VI. 1, 168.

The treatise is divided into six sections or *vargas*.

I. The first section points out cases in which *r* of *ri* is a consonant. In the various phases of Riphita Sandhi—i.e., in which Visarga may be either traced to "*r*" or can be changed to "*r*" (Ṛg Prāt., IV. 9)—the "r" is a consonant. Thus in the combination *prātárindram* (*prātár índram*), the "*r*" of the syllable "*ri*" will be a consonant. It will be also a consonant in Paripanna Sandhi, which, as the Ṛg Prāt. (IV. 5) explains it, is that in which *m* is changed into an Anusvāra before *r* or a spirant. Thus in *hótāraṃ ratnadhā́tamam*, the *r* following the Anusvāra will be a consonant. On the other hand, as the author points out in Section IV., *ṛ* as a vowel cannot allow an Anusvāra before it—e.g., in *sámṛtúbhiḥ*.[2]

[1] Daniel Jones, "English Phonetics," 2nd Edition, p. 11.

[2] *nāpy anusvāraḥ saṃṛtubhiḥ.*

According to the author, *r* is a consonant, before *y*.[1] This seems to be a striking observation. For it is a fact that in Sanskrit we do not find any group *ṛ*+*y*; *ṛ* always changes into *ri* before *y*, and the treatise in the third section quotes Pāṇini, VII. 4, 28, according to which the final *ṛ* of a verb is changed into *ri* before *y*. Cf. Wackernagel, p. 199: "*ṛ* appears to have phonetically become *ri* before *y*."

r in various forms of the numeral *tri* is a consonant, except in *tṛtīya*- and *tisṛ*-. The Śikṣā[2] then enumerates a list of words in which *r* is a consonant and in which it is likely to be confused with *ṛ*, as *ripú*-, *krívi*-, *krimi*-, *riśā́das*, etc.

II. The second section specifies cases in which *ṛ* is clearly a vowel—viz., after an initial group of consonants or before a consonant-group, of which the last is the penultimate sound of the stem.[3] This is an interesting observation, for an initial consonant+consonant+*r* as a consonant does not very commonly occur in Sanskrit, but the author's observation is not universally borne out by the facts of the language, for side by side with *sparkṣyāmi* there do exist in Sanskrit optional forms like *sprakṣyāmi*, where *r* is a consonant, although preceded by a consonant-group. Nevertheless, if the authoı here refers to the language of the Vedas in general and of the Ṛgveda in particular, his observation is probably sound, for forms like *sprakṣyāmi* do not occur in the Vedas (Saṃhitās).[4] Again, the observation that *ṛ* is a vowel when followed by a consonant-group, provided that the penultimate is a consonant, is also interesting, and this is borne out by forms like *tṛpta*-, where *ṛ* is a vowel. But what about forms like *tarptā*, which Pāṇini (VI. 1, 59) allows? Does the

[1] (*a*) *yakāre ca riśoktau ca*; (*b*) *pravobhriyanta ity ādau riṃśayagliṅkṣv iti smṛteḥ*.

[2] The following is the text of the first section: *Oṃ namo brahmaṇe, rephān parinalope niyate praśṛitākāmayoḥ krame, raloṣmopahitor hrasvo ṅnavarjaṃ parinalope niyate* —

[3] *vikramo nāpy anusvāraḥ ṛkāraḥ sa sphuṭaḥ svaraḥ, saṃyogāc ca paraḥ pūrvaḥ saṃyoge vyañjanopadhaḥ*. Section II.

[4] They occur in the Brāhmaṇas; cf. Wackernagel, p. 213.

author's observation indicate that *r* in *tarptā* was vocalic, although orthographically written as a consonant? Sanskrit would hardly allow two such vowels *a* and *r̥* to stand together within a word without undergoing Sandhi. The Śikṣā mentions a couple of negative conditions which are necessary for *r̥* being a vowel: (1) *r* should not be preceded by a Visarga that cannot be changed into a hissing fricative—probably, I think, because the Visarga in this case will be dropped. (2) It should not be preceded by an Anusvāra, as already mentioned above. But it states that a hiatus or a semi-vowel may precede it. It seems to me, however, that these were rules of Sandhi in the light of which the author has tried to determine the position of *r̥*.

Section III. enumerates some further details of cases in which *r* is a consonant. Thus the *r* in *mártya-*, *marda-*, *reṣaṇá-*, and *riṣé* is a consonant, and so is the *r* in *bhriyanta-*, and the author quotes Paṇini, VIII. 4, 28, in this connection.[1]

In conclusion, the Śikṣā makes an interesting observation that *r* both in *r̥* and *r*, when not preceded by any consonant and when followed by a consonant, is a 'concentrated *r*' (*saṃcito rephaḥ*). Thus *r* in *r̥ṣak* (?) *tritá* and *riśā́das-*, *r̥jú-*, and *r̥mjáse* is a 'doubtful consonant' (*saṃdigdhavyañjana*), and the author calls it 'concentrated *r*.' According to the author's theory, then, *r̥* in the word *saṃskr̥ta-*, preceded as it is by a consonant-group, is a clear vowel *r̥*, but *r* in *r̥jú-* and *r̥ñjáse* was a 'concentrated *r*.'[2] According to the author's theory, then, *r̥* in the word *saṃskr̥ta-*, preceded as it was by a consonant-group, was a clear vowel *r̥*, but in *r̥jú-* and *r̥iñjáse* wavered between a vowel and a consonant, and he calls it 'concentrated *r*'—probably, I think, because, like an abstraction, it did not leave a distinct impression on the hearer as to whether the sound in initial *r̥* and *ri* was vocalic or consonantal. When, however, *r* was preceded by a consonant-group and followed by another consonant as in the word *saṃskr̥ta-*, it had a greater chance of being syllabic, as a consonant + consonant + *r* + consonant was a too unwieldy combination in Sanskrit.

[1] Section III.: *devo mardariśādasaḥ, martyaṃ riṣo rīṣato nariṣyed* (?) *gaurī ahhiśritaḥ. prabhobhriyanta ityādau riṃśayagliṅkṣv iti smr̥teḥ budhyo* (?) *riṣa. . . .*

[2] Section III.: *r̥jurimjaseriti cātha ity abhyāsasandhigdhaṃ* [*sic*] . . . *r̥ṇāni ririg iti saṃcito rephaḥ r̥ṣak* (?) *trita iti saṃcito rephaḥ riṣyaḥ riśādasa iti saṃcito rephaḥ.*

CHAPTER II

Rules of Syllabic Division

In the above pages I have shown that, in the opinion of Indian grammarians, the basic principle of syllabic division was vocalic. I now proceed to examine the detailed rules of syllabic division as prescribed by our grammarians.

Syllabication of Consonant + Vowel.

According to the Ṛg and the Taitt. Prātiśākhyas,[1] a consonant followed by a vowel, whether that consonant is initial or intervocalic, will go with the succeeding vowel. Thus the consonants *d* and *m* in *dāna-* and *imān* respectively will go with the succeeding vowel *ā*, and the syllabic division will be *dā/na-*, *i/mān*. Now as regards the initial consonant, its syllabication as prescribed is quite acceptable and does not require any discussion, for it is evident that the off-glide of the initial consonant in *dāna-* must go with the succeeding vowel *ā*. But the case of an intervocalic consonant is not so simple. To which should it belong—to the preceding or the succeeding syllable? Indian phoneticians, like Greek grammarians,[2] connected it with a succeeding vowel. Was it conventional convenience, or was it based on actual observation of phonetic phenomena? It is hardly likely that *apa* should have been in all ancient Indian dialects pronounced as *a-pa*, and in no case *ap-a*, and it is at the same time scarcely likely that this variation of pronunciation should have escaped the observations of such subtle phoneticians as Indian grammarians were. The syllabic division *a-pa*, then, may have been maintained for the sake of conventional uniformity or elegance. Even in the light of modern research a hard and fast syllabic division *a-pa* or *ap-a* would be purely conventional,

[1] Ṛg Prāt., I. 15; Taitt. Prāt., XXI. 2.

[2] According to the Greek grammarians also, as Professor H. Stuart Jones (*Classical Review*, Vol. XV.) points out, every consonant standing between two vowels belonged to the succeeding vowel.

for an intervocalic consonant is divided[1] between two vowels, its on-glide belonging to the preceding and its off-glide to the succeeding vowel. If the preceding vowel is unstressed, and the succeeding one is stressed, then the consonant will incline more to the succeeding vowel and vice versa. That this variation due to accent was noticed by Indian phoneticians will be evident presently in detail. Thus Uvaṭa[2] illustrated the fact that in pronouncing *aggnim*, the second *g* will optionally partake of the accent of *i* or the non-accentuation of *a*—i.e., the syllabic division will be optionally *ag-gním* or *agg-ním*. This variation, however, has been mentioned only in connection with double consonants.

Syllabication of Final Consonants.

Our grammarians lay down that the final consonant will follow the preceding vowel.[3] This observation was on the whole sound. For it is now an established fact that the final consonants of Sanskrit were implosive,[4] so that they eventually disappeared in Pāli and Prākrit. With so much laxity in their articulation they were not likely to be independent syllables. But, as will be shown in Chapter V. (on Doubling),[5] the evidence of the Atharv. Prāt. and of the Cārāyaṇīya Śikṣā, and the testimony of Prākrit words like *jugucchā-*, *ucchava-*, indicate that dialects existed in which the final consonants were pronounced double, as they are in some of the Panjabi and Lahndi dialects at the present day: (cf. *sadd*, 'call'; *chaḍḍ*, 'leave'; *ghatt*, 'throw'). It is not unlikely, therefore, that isolated dialects existed, even in the times of our grammarians, in which the final consonant may have been pronounced sufficiently long to constitute an independent syllable.

Syllabication of Consonant-Groups.

As regards consonant-groups, the most general rule is that the first member of the consonant-group will belong to the preceding vowel: thus *pitre* will be divided as *pit/re* and not *pi/tre*, *mukta-* will be divided *muk/ta-* and not *mu/kta-*.[6]

1 Meillet, "Langues indo-européennes," 3rd Edition, p. 106.

2 On Ṛg. Prāt., I. 15.

3 Taitt. Prāt., XXI. 3; Ṛg Prāt., I. 15.

4 Cf. p. 141.

5 Cf. pp. 106, 109.

6 Ṛg Prāt., I. 15; Taitt. Prāt., XXI. 4. According to the former work, this division was optional: i.e., it could be *pit/re* or *pi/tre*.

That Sanskrit had a predominant tendency to this syllabic division prescribed by our grammarians[1] is corroborated by the doubling which the initials of Sanskrit consonant-groups undergo. The most fundamental rule of doubling prescribed by the Prātiśākhyas is that the first member of a consonant-group, if preceded by a vowel, is doubled. In fact, consonants are not doubled in Sanskrit except when members of a consonant-group, cases of doubling of intervocalic consonants being rare: for details see Chapter V. (on Doubling). The basis of this peculiar doubling was the tendency to close the first syllable of every word. The need felt for this doubling indicated that the genius of the language did not allow a syllabic division *pu+tram*, for it required another consonant to close the syllable *pu*, so that the actual syllabic division was either *put/tram* or *putt-ram*. This is corroborated by several Vedic MSS., which generally double the first member of every consonant-group. Thus Manuscript 5350 (British Museum) of the White Yajur Veda consistently doubles the initial plosive consonant of every consonant-group, not only when preceded by a syllable belonging to the same word—e.g., *rakkṣaḥ* (I. 7), *cakkṣuḥ* (II. 16), *aśśvinorrvvāhubbhyām* (I. 21)—but also when preceded by a separate word—e.g., *upadadhāmi bbhrātṛvyāya* (I. 17), *vvanaspattyo ggrāvāggrāvāsi* (I. 14).

Further examples:

vvivinakktu (I. 16).
cittpatiḥ (IV. 4).
punātu vvākkpatiḥ (IV. 4).
punaśccakkṣuḥ (IV. 15).
saṃdakkṣiṇayoḥ (IV. 23).
yukktāḥ (VIII. 33).
yuttkāmaḥ (IV. 4).
dakkṣāyāḥ (X. 3).

Similarly Manuscript 2391 (India Office) of the same Veda—cf.:

varuṇau ttvā (II. 16).
addya (V. 3).
yukktena (XI. 2).
tena ttyakktena (XL. 1).
lippyate (XL. 2).
prettya (XL. 3).
śāśvatībbhyaḥ samābbhyaḥ (XL. 8).
aṃdhaṃtamaḥ ppraviśanti (XL. 9).
vviddyāñca (XL. 14).
puttreṇa (XL. 17).
svāhā pprāṇebbhyaḥ (XXXIX. 1).
diggbhyaḥ svāhā (XXXIX. 2).
pravṛkktaḥ (XXXIX. 5).
sappta- (XXXIX. 6).
lomabbhyaḥ (XXXIX. 10).
tapptāya (XXXIX. 12).

[1] This syllabic division corresponds to Homeric Greek, which divided πατρίδα as πατ/ϝίδα. Post-Homeric Greek divided it as πα/τρίδα (J. P. Postgate, "A Short Guide to Greek Accentuation," p. 24).

abhimātiggghne (XXXVIII. 8): The third *g* here is evidently a clerical mistake, the corresponding reading in the British Museum Manuscript being *abhimātigghne.*

jyokkte (XXXVI. 19). *akktubhiḥ* (XXXV. 1).

Similar doublings occur in the Gupta inscriptions[1] also, although the doubling in these inscriptions most frequently occurs in the groups plosive+*r* or aspirated consonant+semi-vowel, as the following examples will show:

Plosive+*r*.	Aspirated Consonant+Semi-Vowel.
parākkrama- (Ins. No. 1.).	*addhyeyaḥ* (No. 1).
kāvyakkriyābhiḥ (Ins. No. 1).	*sāddhvasādhuḥ* (No. 1).
vikkrama- (II.).	*patthyam* (XVIII.).
puttrasya (X.).	*maddhyamena* (XXII.).
puttrasya (XII.).	*ayuddhyata* (XXII.).
vidyādhariḥ ppriyatamā (XVII.).	

Another very frequent occurrence of doubling in these inscriptions is that of the plosive in the group *r*+plosive, as the following examples will show:

ārttham (XIV.).	*dīrggha-* (XVIII.).
ārtti- (XIV.).	*ārtta-vargga-* (XVIII.).
darppaḥ (XIV.).	*āvarjjana-* (XXXIII.).
mārggam (XVII.).	*durggame* (XXXV.).
svarggam (XVII.).	

There is no doubt that in the above examples the first member of the group—viz., *r*—has not been doubled, and it may prima facie appear as if it was an exception to the rule of syllabication given above; but a closer reflection will show that even here the same tendency has worked—viz., that of keeping the first syllable close, so that *svarggam* was divided as *svarg/gam*. The first syllable here could not be closed with *r*, because there exists no word in Sanskrit that ends in *r* at the end of a sentence.

This tendency is further corroborated by the peculiar assimilation in the living dialects. Thus in the case of several consonant-groups, Prākrit has, unlike French, kept up the initial plosive of consonant-groups, although it has lost the plosive in the final position. Assimila-

[1] Fleet, "Gupta Inscriptions."

tions like *putto*, *pitte* for *putraḥ*, *pitre* indicate that Prākrit maintained the tradition of keeping in pronunciation the first syllables of these words close. Even in Aśokan inscriptions, in which double consonants are generally neglected, may be found such instances as *kaṃme* (Edict VI.), *aṃnanti* (IV.), *savvatra* (VII.), *dhaṃma-* (I., etc.).[1] The traditional syllabic division of *putram* which served as the original background must have been therefore *put/(t)ram*. That the doubling in Prākrit faithfully represented the original division may be corroborated by a negative instance from Italic languages. Havet[2] has pointed out that original Latin always divided *patrem* as *pa-trem* (contrary to Sanskrit division) and never *pat-rem*. It was the syllabic division *pa-trem* which could ultimately pass off into *père*.

But in the case of the group plosive + plosive, it may prima facie appear as if the corresponding forms in Prākrit do not confirm the rule of syllabication prescribed by our grammarians. For corresponding to the group plosive + plosive in Sanskrit, the Prākrit form is—the second plosive doubled: cf. Skr. *bhakta-* = Prākrit *bhatta-*, Skr. *mukta-* = Prākrit *mutta-*, Skr. *mudga-* = Prākrit *mugga-*, Sanskrit *ṣaṭka-* = Prākrit *chakka-*. These examples may suggest to the superficial observer that the first member of the consonant-group belonged to the succeeding syllable, because it was assimilated to the succeeding consonant. But a little reflection will show that even here the same tendency has worked —viz., that of keeping the first syllable close, for the succeeding syllable could not begin with a double consonant: the division of *bhatta-* as *bha/tta* was quite unlikely. Hence even here the living dialects reveal the validity of our grammarians' rule that the first member of a consonant-group belonged to the preceding syllable, so that *bhatta-* and its corresponding Sanskrit form *bhakta-* were divided *bhat/ta-* and *bhak/(k)ta-* respectively. Again, the superficial observer may be misled by the non-occurrence of doubling in several consonant-groups in the Gupta inscriptions. I have shown above that the most frequent groups in which doubling has occurred in these inscriptions are:

(1) Plosive + *r*; (2) aspirated consonant + semi-vowel; (3) *r* + plosive.

In the case of other consonant-groups, however, non-doubling in

[1] Cf. Cunningham, p. 69; Hultzsch, p. 99.

[2] MSLP, IV. 24.

these inscriptions is the general rule, as the following examples will show:

vidyate (Inscription No. 27).
amātya- (Inscription No. 27)
utpadyamāna (Inscription No. 29).
viṣyandita- (Inscription No. 35).
samprāpte (Inscription No. 36).
prāptena (Inscription No. 32).
sapta- (Inscription No. 32).
anyattra (Inscription No. 32).
yukta- (Inscription No. 36).
vidyotate (Inscription No. 37).
utkṣipta- (Inscription No. 33).
śabda- (Inscription No. 34).
samutpatti- (Inscription No. 34).
bhaktasya (Inscription No. 36).
labdha- (Inscription No. 38).

A similar impression may be created by several Vedic manuscripts. In striking contrast with the Vedic manuscripts mentioned above, several other Vedic MSS. have gone even further than the Gupta inscriptions in relaxing the orthographical duplication of consonants which are members of consonant-groups. Thus in several MSS. of the Ṛgveda and the Sāma Veda, doubling is confined only to the group *r* + plosive or *r* + semi-vowel, while there is no doubling in the group aspirated consonant + semi-vowel, though the Gupta inscriptions have kept up this doubling. There are several cases in these manuscripts in which there is no doubling even in the group *r* + plosive. The following examples will show this laxity of doubling in several Vedic manuscripts:

MSS. India Office 132, 1690, 1691 (Ṛgveda) and 1283, 2130 (Sāma Veda):

Cases of Doubling.	Cases of Non-Doubling.
samarddhayantu	*agnim*
sarppi-	*ratnam*
ūrjjam	*pavitram*
varddhata	*atra*
iyartti	*adribhiḥ*
varttani-	*satyam*
avarddhayam	*dadyan*
marddaya	*adhvara-*
sūryyam	*madhyamāsu*
āryyasya	*martya-*
śarddha-	*arkasya*
	arcirbhiḥ
	garbha-

These examples may lead the superficial observer to think that a divergent tendency for non-doubling phonetically existed in the spoken languages. But the evidence of the living dialects is more conclusive on this point, for these dialects most frequently give duplication corresponding to any consonant-group (except where there is Svarabhakti). There are only a few forms, e.g., Prākrit *rāī* for *rātri-* (side by side with *ratti-*) and Uṛiya *puā* for *putra-*, in which doubling has not taken place.[1]

The non-occurrence of doubling, then, in perhaps the majority of manuscripts and inscriptions may be explained on the ground that doubling was so common in actual pronunciation that several authors and scribes knew it to be evident to the reader, and did not think it necessary to transcribe it. Manuscripts of the 'orthodox' type, however, faithfully kept it up. The living dialects and the orthodox MSS., then, indicate that whenever a consonant-group occurred in actual pronunciation, the preceding syllable was kept close, and that the observation of Indian grammarians regarding this point was sound.

Syllabication of Doubled Consonants.

As a general rule, consonants in Sanskrit could be doubled only when members of a consonant-group: for details see Chapter V. (on Doubling). So the rule regarding the syllabication of doubled consonants presupposes that the doubled consonant in question is followed by a consonant or a semi-vowel. Now there was a divergence of views regarding the syllabication of this doubled group. According to the Ṛg Prāt.,[2] the second member of the doubled group can optionally belong to the preceding or the succeeding syllable, and Uvaṭa in this connection points out that the second consonant will optionally share the accent of the preceding or the succeeding syllable. Thus in *áttvā*, the first *t* belongs to the preceding syllable and thus shares the high accent of *á*, but the second *t* can optionally belong to the preceding or the succeeding syllable, and so can share the high accent of the preceding *á* or the low accent of the succeeding *ā*, the syllabic division being optionally *átt/vā* or *át/tvā*. Again, in *aggnim*, the first *g* of *aggnim* will belong to the preceding syllable, and so will share the low tone of *a*, but the second *g* can optionally belong to the preceeding or the succeeding syllable, and so share the low tone

[1] For further examples cf. Pischel, p. 76.

[2] I. 15.

of *a* or the high tone of *í*, the syllabic division of *aggnim* being optionally *agg-ním* or *ag-gním*. According to the Vāj. Prāt.,[1] however, the syllabication of doubled consonants varied according as they were followed by a consonant (except a fricative) or a semi-vowel. If the doubled group was followed by a consonant, then both the members of the doubled group belonged to the preceding syllable—e.g., *aggním*, *pārṣṣṇyā* were respectively to be divided as *agg-ním*, *pārṣṣ-ṇyā*. If, however, the doubled group was followed by a semi-vowel, then only the first member belonged to the preceding syllable—e.g., *varṣṣyāya* and *pārśśvam* were respectively to be divided as *varṣ-ṣyāya* and *pārś-śvam*.

Let me now examine the validity of these observations.

1. Strictly speaking, division of a doubled consonant is possible only when the first consonant explodes before the second—e.g., if in the articulation of the word *aggním* the first *g* exploded before the second *g*, the syllabic division could have been *ag*/-/*gním*. But I do not know of any language in which during the articulation of a doubled consonant the first consonant explodes before the second. This explosion, as Professor Daniel Jones tells me, does not occur even in Italian, in which distinctly double consonants are pronounced, as in *ditto*. Moreover, as will be explained in detail in Chapter VIII. (on Abhinidhāna), Indian grammarians also did not maintain the explosion of a consonant within a doubled group. Thus even Vyāḍi,[2] who was opposed to the theory of Abhinidhāna, held that incomplete plosion was possible only in the case of a doubled consonant. And the validity of their view is corroborated by the fact that doubled aspirated consonants in Sanskrit, as perhaps in all languages, were pronounced only with a single explosion.

If, therefore, the Ṛg Prāt. implied that the optional division of *aggním* was *ag*/-/*gniṃ* in the above sense, the division prescribed was not probable.

2. Another possible division of *aggním* was *ag*/*gním*. This division implied that although the consonant pronounced was only a single long consonant, the hearer heard a fall of prominence at the on-glide of *g*. This fall of prominence was continued in the form of a long silence during the contact or 'stop' stage, and there was a rise of prominence again at the plosion of *g*. The hearer then seemed to

[1] I. 104: '*karmajaś ca*'; I. 105: *tasmāc cottaraṃ sparśe.*

[2] Ṛg Prāt., I. 12.

hear two *g*'s, the first belonging to the syllable *ag*, the second forming part of the syllable *gnim*.

In this restricted sense the division *ag/gnim* prescribed by the Ṛg Prāt. may have been possible; but the Vāj. Prāt. does not accept even this division. It states that if the doubled consonant in question is followed by a consonant (except a fricative), the division will not be *ag/gnim*, but *agg/nim*; in other words, the group *gg* in *aggnim* was pronounced merely long, and the hearer did not hear two *g*'s each distinct from the other. But in a word like *pārśśva-*, the syllabic division according to this Prātiśākhya could be *pārś/śva-*. And this differentiation by the Vāj. Prāt. can be explained on phonetic grounds. For 'distinctive' doubling (i.e., doubling in which the first consonant is heard distinct from the second) is less probable when another plosive or a nasal consonant follows, for it is not so easy to sustain the breath-force for the articulation of two distinct *g*'s and a succeeding plosive. When, however, a vowel, a semi-vowel, or a fricative follows, the distinctive doubling is easier, as the breath-force for the off-glide of *g* does not meet much obstruction in this case.[1] Thus in several Panjabi and Lahndi dialects, distinctive doubling is prominently heard when a vowel follows—e.g., in *vaḍḍā, gattā*; but it is not heard when a consonant follows—e.g., in *vaḍkā, gatkā*. Nevertheless, it would be rash to suppose that the syllable division *ag/gnim* was not possible in any Indian dialect.

Syllabication of "r" + Doubled Plosive.

The Atharv. Prāt. (I. 58) notices a case of doubling which has persisted in the language of the Gupta inscriptions and in classical Sanskrit —viz., the doubling of a plosive after *r*; cf. the following examples from the Gupta inscriptions:

mārggam, *varggam* (Inscription No. XVII.); *dīrggha-*, *vargga-*, *ārtta-* (XVIII.); *āvarjjana-* (XXXIII.).

In the opinion of this Prātiśākhya the additional stop arising from doubling will belong to the preceding syllable; thus *arkkaḥ* will be divided as *ark-kaḥ*.

I think that four (possible) divisions of the word written *arkkaḥ* are conceivable:

1. *ark/-/kaḥ*, *k* exploding fully before the succeeding *k*. Strictly

[1] Cf. Saussure, "Cours de Linguistique générale," p. 87.

speaking, this division would be the only valid one if really double consonants, as distinguished from merely long consonants, were meant. But as I have pointed out above, in a double consonant the first was incompletely articulated before the second. Hence, if the division *ark/-/kaḥ* was taken to be strictly in the sense that the first *k* fully exploded before the second *k*, the division proposed was inconsistent and invalid.

2. *ark/kaḥ*. This division implied, as already explained, that although the consonant pronounced was only a single long consonant, the hearer seemed to hear two *k*'s, owing to the discontinuity of intensity caused by the long silence intervening between the on-glide and off-glide of *k*, the first belonging to the syllable *ark*, the second forming part of the syllable *kaḥ*.

In my opinion, in this restricted sense the division *ark/kaḥ* prescribed by the Atharv. Prāt. was valid.

3. *arkḱk-aḥ*. This division was conceivable when the first syllable had a strong stress-accent. But it was hardly consistent with the general tendency of the language, for the living dialects did not generally allow a syllable to end in a double consonant, especially when a vowel followed

4. *ar-kaḥ*. The so-called double *k* in this division might have been actually pronounced as single, though orthographically written double.

But the occurrence of the syllabic division *ar-kaḥ* in Indian pronunciation does not seem to have been very probable. For, in the first place, as will be shown in Chapter V. (on Doubling), Sanskrit had a tendency to double the plosive after *r*; so Sanskrit pronounced *arkaḥ* as *arkkaḥ*, *svargaḥ* as *svarggaḥ*, and hence the more probable division was *ark/kaḥ*, etc., as explained above. Secondly, Sanskrit had an aversion to closing a syllable with *r*, for there does not exist a Sanskrit word ending in *r* (cf. p. 64). Thirdly, corresponding to Sanskrit *r*+plosive there exists only double plosive in Pāli and Prākrit: cf. Sanskrit *varga-*= Pāli and Prākrit *vagga-*, *darpaṇa-*=*dappaṇa-*, *durbala-*=*dubbala-*. There is no doubt that this doubling in the living dialects may also be explained on the grounds of assimilation, so that *var-ga* may have become *vag-ga* by the direct change of *r* to *g*. But on account of the above two reasons—viz., the tendency to double the plosive and aversion to closing a syllable with *r*—I think that

varg/ga was the more probable division, though, of course, *var/ga* was not an impossible division.

At any rate, the Atharv. Prāt.'s above observation that in the case of the doubling of the plosive after *r*, the first 'plosive' belongs to the preceding syllable, will be beyond dispute, if by 'plosive' the author meant the 'stop' stage of that consonant.

According to the R̥g Prāt. (I. 15), however, both the members of a doubled consonant after *r* or a fricative can optionally belong to the preceding or the succeeding syllable, so that the syllabic division of *ārttnī* will be optionally *ārtt/nī* or *ār/ttnī*, of *pārṣṣṇya-* optionally *pārṣṣ/ṇya* or *pār/ṣṣṇya*. It will be apparent from the above discussion that the optional division *ār/ttnī*, *pār/ṣṣṇya* was not probable in Indian dialects: firstly, because Sanskrit had an aversion to closing a syllable with *r*; and, secondly, because a syllable beginning with a double consonant, as *ttnī*, *ṣṣṇya*, was hardly likely to have occurred in Indian dialects.

Syllabication of Plosive+Fricative.

According to the Taitt. Prāt.,[1] the plosive in the group plosive+fricative belongs to the succeeding syllable, but in a group plosive+fricative+consonant, the plosive belongs to the preceding syllable. Thus in the combination *tatsavituḥ*, the division of *tatsa-* will be *ta/tsa*, of *jugupsā=ju/gu/psā*.

It seems that in the pronunciation of academic Sanskrit, the plosive, in combinations like *yāvat hi* (=*yāvadd hi*), *utsavaḥ*, was not held so apart from the succeeding fricative as to give rise to the division *yā/vat/hi*, *ut/savaḥ*. This is indicated by the doubling tendency and by the internal evidence of Sanskrit Sandhi. Thus Sanskrit *labh + sye* became *lap/(p)sye*, indicating that the *bh* in this group was carried over to the succeeding *s*, the assimilating force of which devocalized the *bh*. Similarly, when *yāvat hi* became *yāvaddhi*, the plosive *t* was probably carried over to the succeeding syllable. There is, however, a flaw in the prescribed syllabication. The author has not pointed out that the plosive was not simply carried over to the succeeding syllable, but it was also doubled at the same time. Thus in academic Sanskrit forms *yāvaddhi*, *tacchatruḥ* for *yāvat hi*, *tat+śatruḥ* respectively, and in Prākrit forms *macchara-*, *jugucchā* for Sanskrit *matsara-*.

[1] Taitt. Prāt., XXI. 9: *sparśaś coṣmapara ūṣmā cet parasya.*

jugupsā, the plosive was not simply carried over to the succeeding syllable, it was also doubled at the same time; so that in actual pronunciation the syllabic division seems to have been *jugup/psā* rather than *ju/gu/psā*. The general tendency of keeping the preceding syllable close before a consonant-group was also maintained in this division.

Moreover, there are indications of a divergent tendency in several Sanskrit forms, showing that the Prātiśākhya's rule regarding the syllabication of the group plosive+fricative was not universally applicable. Thus the grammarians[1] state that in a group final cerebral +*s*, an intermediate consonant, viz. dental *t*, occasionally intervenes, Pāṇini stating it to be optional. For instance, *ṣaṭ+santaḥ* became optionally *ṣaṭtsantaḥ*; *ṣaṭ+sahasrāḥ>ṣaṭtsahasrāḥ*; *madhuliṭ+sāye> madhuliṭtsāye*. It seems that in these sporadic cases, the final cerebral was not carried to the succeeding syllable. A similar treatment of velar plosive+*h* may be observed. For the grammarians[2] state that the *h* in this combination became optionally an aspiration of the preceding consonant—e.g., *arvāk hy enam* either became *arvāgghy enam* or remained unchanged. In the majority of cases a plosive+*h* in academic Sanskrit gives a double consonant aspirated, so that *tat+hariḥ>taddhariḥ*, *vāk=hariḥ>vāggghariḥ*, yet the occasional option in the case of velar+*h* indicates that the plosive was not necessarily carried over to the succeeding syllable.

With the above reservations, the Prātiśākhya's observation, that the plosive was carried to the succeeding syllable to which the fricative belonged, was probably sound. And the probable validity of this observation is indicated by the living dialects. Thus in Prākrit, Sanskrit *ts* and *ps* are represented as *cch* by passing through the stage *tsh*: e.g., Sanskrit *vatsa-* = Prākrit *vaccha-*, *matsara-* = *machhara-*, *jugupsā* = *jugucchā*; while Sanskrit *kṣ-* has become Prākrit *kh* or *ch*: e.g., *kṣamā* = *khamā* or *chamā*. This effect of the succeeding fricative has been so strong that in compound words the final *t* of a prefix has actually become a fricative before another fricative in Prākrit. Thus in Ardhamāgadhī Sanskrit *utsarga-* has become *ussagga-*, Sanskrit *utsedha-* has become *ussedha-*.

This close affinity of the plosive for the succeeding fricative, and

[1] Atharv. Prāt., II. 8: *ṭakārāt sakāre takāreṇa*; Pāṇ., VIII. 3, 29: *ḍaḥ si dhuṭ*.
[2] Taitt. Prāt., V. 38: *prathamapūrvo hakāraś caturthaṃ tasya sasthānaṃ plākṣi-kauṇḍinyagautamapauṣkarasādīnām*.

the consequent assimilation, were closely observed by Indian grammarians. Thus according to the Yājñavalkya Śikṣā[1] a non-aspirated *k* at the end of a pada when followed by *s* was to be pronounced like *kh*; e.g., *bhiṣak-sīsena* was to be pronounced *bhiṣakh-sīsena*. A non-aspirated *p* at the end of a word when followed by *s* was to be pronounced like *ph*; e.g., *apsv agne* was to be pronounced *aphsv agne*; and similarly for other non-aspirated plosives.

The Nārada Śikṣā[2] similarly prescribes that these non-aspirated plosives should be pronounced *like* aspirated consonants, but adds that they do not deserve the designation of aspirated consonants. It seems that this Śikṣā had observed the transitional stage through which the plosives in question passed before they eventually became aspirated consonants proper in Pāli and Prākrit. This phenomenon, however, has been mentioned even in the Ṛg Prāt. (XIII. 16), where it is laid down that according to some authorities a non-aspirated plosive when followed by a fricative should be pronounced as an aspirated consonant.

This tendency of bringing together the plosive and the fricative in syllabication is further indicated by the interesting prohibition in Chapter XIV. of the Ṛg Prāt.[3] which points out defects of pronunciation. According to this prohibition, as Uvaṭa illustrates it, *abhutsmahi*, *ustsanāya*, and *viśvapsnyasya* should not be respectively pronounced *abhutstmahi*, *utstnāya*, and *viśvapstnyasya*. The insertion of an additional intrusive sound *t* in these examples was condemned as a defect in pronunciation, and yet this intrusive sound *t* was a natural reconciliation between two conflicting tendencies in the Sanskrit speaker. On the one hand, there was the inclination to carry *t* over to *s*, and, consequently, to divide *abhutsmahi* as *a/bhuts/mahi*. On the other hand, as will be pointed out in Chapter V. (on Doubling: see p. 75), Sanskrit had an aversion to closing a syllable with *s*, so that, instead of *a/bhuts/mahi*, the actual division became *a/bhutst/mahi*, by closing the syllable with *t*. These examples, then, seem to indicate that in actual pronunciation the plosive and the

1 ŚS, p. 20: *kakārānte pade pūrve sakāre parataḥ sthite khasavarṇam vijānīyād bhiṣakksīsena darśanam. pakārānte pade pūrve sakāre parataḥ sthite, phasavarṇam vijānīyādappsv agneti nidarśanam.*

Also *Svarabhaktilakhṣaṇa-pariśiṣṭa Śikṣā*, 10-11.

2 ŚS, p. 437: *prathamān ūṣmasaṃyuktān dvitīyān iva darśayet na cainān pratijānīyād yathā matsyaḥ kṣuro 'psarāḥ.*

3 XIV. 5: *adeśe vā vacanaṃ vyañjanasya.*

fricative were not held so much apart from each other as to give rise to the syllabic division *abhut/smahi*. For, if the syllabic division in actual pronunciation had been *abhut/smahi*, the additional intrusive sound *t* after the fricative would have been unnecessary. It is improbable that this glide sound *t* belonged to the second syllable, for the syllable **tsmahi* was not likely to have occurred in Sanskrit, there being no example of a word in Sanskrit beginning with a group of three consonants consisting of plosive+fricative+sonant. So much, then, about the division of the group plosive+fricative, in which the plosive was to be carried over to the succeeding syllable. But as regards the group plosive+fricative+consonant, the same Prātiśākhya[1] lays down that the plosive will go with the preceding syllable. Thus in the combination *jagat/sthāḥ*, the *t* of the group *tsth* will go with the preceding syllable, so that the syllabic division will stand as *jagat/sthāḥ*. It will appear from the reasons that I have given above, that *jagat/sthāḥ*, as prescribed by the author, was the most probable division of the group, for it is hardly likely that the other two possible divisions—viz., *jagats/thāḥ* and *jaga/tsthāḥ*—occurred. For, as regards the former, the Sanskrit speaker had an aversion to closing a syllable with *s*; while as regards the latter, it is a well-known fact that Sanskrit did not have the general tendency to allow *s* to stand between two plosives: cf. the Aorist third person singular forms *arutta* (= **arudhsta*), *akṣipta* (= *akṣipsta*); though the examples like *abhutstmahi* indicate that in actual pronunciation in some dialects *tst* could close a syllable.

To avoid the contingency of this unwieldy group of consonants, some of the living dialects in such groups of three consonants, in the middle of which there is a fricative, have added a Svarabhakti vowel, so that the corresponding group in Pāli and Prākrit has only two instead of three consonants, the fricative amalgamating with the plosive and making it an aspirated consonant: cf. Sanskrit *tīkṣṇa-* = Pāli *tikkhiṇa-*; *pakṣman-* = Pāli *pakhuma-*; *sūkṣman-* = Pali *sukhuma-*.

Fricative+Plosive.

Indian grammarians have not handled the division of the group fricative+plosive, and it may be of interest to consider what was the most probable division of this group in the actual pronunciation of

[1] Taitt. Prāt., 21, 9.

Sanskrit. The Sanskrit speaker in this case had to decide between two conflicting tendencies. On the one hand, he had the tendency to carry to the preceding syllable the first member of consonant-groups; on the other hand, he had an aversion to closing a syllable with a fricative consonant, for Sanskrit did not generally allow a word to end in a fricative consonant.[1] The doubling of the plosive after the fricative reconciled these conflicting tendencies, so that presumably the pronunciation of *hasta-* was *hastta-* and the syllables were divided thus: *hast/ta.* Similarly, *puṣṭa-* and *avaskanda-* were probably divided as *puṣṭ/ṭa* and *avask/kanda* respectively. This is indicated by the corresponding Prākrit words, in which the plosive in question, under the influence of the preceding fricative in the same syllable, has become an aspirated consonant—e.g., *hattha-*, *puṭṭha-*, *avakkhanda-*.

Moreover, by the doubling of the plosive in the Prākrit forms (though phonetically also present in the corresponding Sanskrit forms) the predominant tendency to close the first syllable was also satisfied. There are several Prākrit forms, however, in which the plosive in question has not been aspirated, but has been only doubled—e.g., *dupparisa-*, *sakkada-*, *tirakkariṇī*, *bahappadi* (side by side with *bihapphadi*) for Sanskrit words *duḥsparśa-*, *saṃskṛta-*, *tiraskariṇī*, *bṛhaspati-*. These examples do not positively indicate to which syllable the *s* belonged, but even they seem to indicate that the first syllable did not close with *s*, for they show no trace of it.

Syllabication of Consonant+Semi-Vowel and of Semi-Vowel+ Semi-Vowel.

According to the Taitt. Prāt.,[2] in a group consonant+semi-vowel, the consonant went with the succeeding syllable, but in a group semi-vowel+semi-vowel, the first semi-vowel followed the preceding syllable.

As regards the group consonant+semi-vowel, the examples cited are *adhyavasāya-*, *iṣetvā*. The *dh* in *adhya* and the *t* in *tvā* were carried over to the succeeding syllable. Thus the syllabic division of *adhya*, in the opinion of the author, was *a/dhya*. The phonetic explanation given by the commentary Tribhāṣyaratna is that as a consonant is unable to stand by itself, it must go with the succeeding vocalic syllable. The explanation, however, seems to be inadequate,

[1] Except a Visarga, which had a very small consonantal element.

[2] XXI. 7: *nāntasthāparam asavarṇam.*

for there is no reason why the consonant, unable to stand by itself, should not go with the preceding syllables in the examples before us, for the preceding syllables here are also vowels. According to the commentary, the semi-vowel in the group consonant+semi-vowel behaves like a vowel, and the consonant, like all intervocalic consonants according to the rule of the Prātiśākhyas, was consequently carried over to the succeeding syllable. That the semi-vowel in such cases could behave like a vowel is corroborated by the well-known rule of the R̥g Prāt. (XVII. 14) that when it is necessary to make up the requisite number of syllables in a metre, the semi-vowel in a group consonant +semi-vowel may be taken as a vowel or syllabic *iy* and *uv*.

But as I have already pointed out in the above pages, the rule which requires all intervocalic consonants to be carried over to the succeeding vowel is purely conventional and arbitrary, and if it is maintained to be universal even within a single dialect it would be phonetically unsound. There seems to be no reason, then, why, on the grounds advanced by the commentator, the syllabic division should not be *adh* /*ya*, *iṣet* /*vā*. What more probably happened in the syllabication of consonant+semi-vowel was the doubling of the consonant and the carrying over of the second consonant to the succeeding syllable. Thus it does not seem to be likely that *adya* was pronounced *ad* /*ya*, and in this negative sense the Taitt. Prāt.'s prescription that the consonant did not belong to the preceding syllable, but was carried over to the succeeding syllable, was probably sound. But if the author implied thereby that the syllabic division of *adya* was *a* /*dya*, his opinion was disputable, as the testimony of manuscripts and the living dialects indicates that the consonant in forms like *adya-*, *padya-*, *ujvala-*, *pakva-* was doubled. The second consonant was then carried over to the succeeding syllable, and, in the living dialects, underwent assimilation to the semi-vowel. Thus the above forms were more probably divided as *ad* /*dya*, *pad* /*dya*, *uj* /*jvala*, *pak* /*kva*. That the consonants were actually doubled in these cases has been already shown in the above pages, but at the same time the syllabic division, in spite of the doubling, was not *add* /*ya*, *padd* /*ya*, *ujj* /*vala*, and in this negative sense I agree with the author of the Taitt. Prāt. For the living dialects indicate that in syllabic division the consonant was not kept distinctly apart from the succeeding semi-vowel, as in Pāli and Prākrit the consonant has been assimilated to the semi-vowel, e.g. *adya-a*>*jja-*, etc.

This doubling of the plosive, and, as in Russian[1] and occasionally in French, the palatalization of the dental with the disappearance of the semi-vowel as a separate sound, seem to indicate that the consonant was not held apart from the succeeding semi-vowel in syllabic division, but underwent a phonetic change by assimilation to the semi-vowel, either by mere doubling of the plosive and disappearance of the semi-vowel, or palatalization, as shown above. So far, then, as the Taitt. Prāt. observed this inseparable affinity of the consonant for the succeeding semi-vowel, its observation was sound. The only omission in the author's prescribed syllabication was that of the doubling of the consonant.

When, therefore, Sanskrit *adya* became Prākrit *ajja*, *satya-*>*sacca-*, the syllabic division probably passed through the stages *ad/dya*= *ad/jya* = *ajja*: *sat/tya-* = *sat/cya-* = *sacca-*.

Syllabication of Semi-Vowel+Semi-Vowel.

As regards the group semi-vowel+semi-vowel, the Taitt. Prāt.[2] states that the first semi-vowel in this group will belong to the preceding syllable. Thus the *v* in *navya-* will belong to the preceding syllable; similarly, *y* in *paricāyyam* will belong to the preceding syllable. The first semi-vowel in this group, then, will behave like the first member of a consonant-group, and will thus follow the general rule of syllabication to which consonant-groups were subject—viz., the first member of the group will belong to the preceding syllable. The *v* in the group *vy* will then behave like the *t* in *putra-*, or the *k* in *mukta-*, the probable syllabication of which has been shown to be *put/tra*, *muk/(k)ta-*. We saw that the first member of these groups was actually doubled in pronunciation, and in pursuance of the same scheme of syllabication the syllabic division of *navya-*, in accordance with the prescription of the Taitt. Prāt., was likely to have been *nav/vya-*. The syllabication of groups like *vy*, however, in actual pronunciation was much more complicated than the division prescribed

[1] Thus in Russian, *y* first palatalizes the preceding consonant, then becoming a mere glide makes a palatal consonant of it, e.g. *ditya*>*dica*; and similarly in some of the French dialects, cf. *paNe* for *panier*, *nu prəNɔ̃* for *nous prenions* (Passy, "Changements phonétiques," p. 174). Cf. how English *piktjuə* has be- (Professor Jones, "English Phonetics," 2nd Edition, p. 103). come *piktʃə*

[2] XXI. 7: *nāntasthāparam asavarṇam.*

by the Taitt. Prāt. There is no doubt that the living dialects, in a large number of cases, indicate doubling of the first member of *vy*, so that in Prākrit and Pāli, Sanskrit *vy*=*vv* or *bb*: (cf. *nabba-* = Sanskrit *navya-*, *kādavva-* = *kartavya-*, *dādavvā*= *dātavyā*, *anuciṭṭhidavvam* = *anuṣṭhātavyam*. This doubling of the first member of *vy* is also commonly met with in several Vedic MSS.: cf. *daivvyā*, *madhuvvyam*, *pṛthivvyām* (India Office, 2391), *bhrātṛvvyasya*, *pṛthivvyasi* (British Museum, 5350). These examples, then, seem to confirm the syllabication prescribed by the Taitt. Prāt., as the doubling of the first member indicates that the general tendency of keeping the first syllable close was maintained in this case.

I have come across divergent cases, however, which seem to indicate that the syllabic division *nav/vya-* which the Taitt. Prāt. seems to prescribe did not universally occur in Indian dialects. For in the Ṛgveda *navya-* sometimes appears as *naviya-*, as in Ṛgveda, I. 105-15 (cf. Arnold's "Vedic Metre," p. 293), VIII. 11, 10, while in Aśokan inscriptions also *vy* has sometimes become *viy*: cf. *chamitaviya-*, *vijayaṃtaviya-* (Woolner's "Glossary," p. xxxvi). These examples indicate that the tendency to close the preceding syllable with *v*, whenever the group *vy* occurred, was not universal. For side by side with the division *nav/vya-*, there also possibly existed *na/vi/ya-*.[1]

Moreover, that this tendency to close the syllable with *v* was not universal is indicated by the treatment of *vy* in Pāli metre, as the group *vy* in Pāli metre often does not make position.[2]

I have taken the above prescription of the Taitt. Prāt. to imply that the first syllable in *navya-* was kept close by the doubling of *v*, as in *nav/vyás*, *put/tra*. If, however, the author meant to imply that *v*, without being doubled, was to be carried to the first syllable, the division being *nav/ya-*, then *v*, being at the end of a syllable, became very nearly a vowel, as will be shown in Chapter VI. In that case the pronunciation would have resulted in **no-yás*, as in the case of Lithuanian *naũyas* from Indo-European **noũyos*. But the fact that no such form has been found in India is an additional argument against the division *nav/ya-*.

[1] This *iyás* in some forms may have been due to the analogy of words containing the suffix *iya*, representing Indo-European *iyo-*, after an originally long syllable. Cf. I.E. **wīriyo*.

[2] *Der Śloka im Pāli*, ZDMG, Vol. XLIV., p. 95.

Syllabication of the Yamas.

There was an interesting divergence of views among Indian grammarians regarding the syllabication of the Yamas. The Yamas were said to be particular nasal sounds occurring in the group plosive + nasal consonant, being due to partial nasal plosion of the plosive. Yama literally means "twin," as there were said to be two stages in the articulation of the plosive, as in *rukk̃ma-*, *padd̃ma-*, *svapp̃na-*. The first stage was the implosive stage of the plosive. In the second stage air began to pass through the nasal cavity while the contact for the articulation of the following nasal consonant was being formed. The passage of air through the nasal cavity was said to nasalize the plosive. But what really happened in *rukk̃ma-* was not the nasalization of the plosive, but a devoiced *ṅ* appearing at the explosive stage of *k*, and what really happened in *padd̃ma-* was the appearance of a *n* at the explosive stage of *d*, so that an intrusive sound was inserted—viz., the nasal consonant corresponding to the plosive at its explosive stage. The Yamas, then, were nasal sounds intervening between the plosive and the nasal consonant, and the question arose whether they belonged to the preceding or the succeeding syllable. According to the Taitt. Prāt.[1] the Yamas belonged to the succeeding syllable, so that the syllabic division of the above words in accordance with the opinion of this authority was *pad/d̃ma-*, *ruk/k̃ma*, *svap/p̃na*. According to the Vāj. Prāt.,[2] however, they belonged to the preceding syllable. Both views were phonetically possible, for, by the force of regressive assimilation which was so prominent in Sanskrit, the opening of the nasal cavity for the articulation of the succeeding nasal consonant may have taken place *not only while the preceding plosive was being exploded*, but, in some dialects, even before its articulation had started. That there are indications of both these tendencies in those times, and that these observations actually refer to particular dialects, is indicated by parallel phenomena in Pāli and Prākrit. Thus while in Ardhamāgadhī (Pischel, pp. 190-191) we have *ruppiṇī* for Sanskrit *rukmiṇī*, in Pāli we have *rummavatī* for *rukmavatī*. In the former case, nasality has been entirely driven out of the consonant-group, so that there could be no question of the nasal sound Yama as belonging to the preceding syllable. In the latter case, however, the nasal consonant has entirely driven out the plosive,

[1] XXI. 8. [2] I. 103.

representing cases in which the opening of the nasal cavity, by the force of assimilation of the succeeding nasal consonant, had the tendency to start earlier, and so in this case the Yama may be said to have belonged to the preceding syllable. Similarly, additional examples from Pāli, as *pañña-* for *prajña-*, *rañña-* for *rājña-*, *āṇā* for *ājñā* (Geiger, p. 64), indicate how nasality had attacked the preceding plosive. And yet some of the Pāli dialects also indicate opposite tendencies; thus while we have *pañña-* for *prajña-*, we have at the same time *soppa-* for *svapnaḥ*, *aggi-* for *agni-*, *āttaja-* for *ātmaja-*.[1]

As regards the group fricative+nasal consonant, there was some divergence of opinion. While the Atharv. Prāt. (I. 100) permits a partial nasalization of *h* in *jihma-*, *brahma*, etc., the Śikṣās expressly prohibit the nasalization of fricatives. Thus the Cārāyaṇīya Śikṣā[2] lays down that in the group *h*+*m* air should not be exploded through the nostrils, while the Yājñavalkya Śikṣā[3] prohibits the nasalization of hissing fricatives, and states that when nasal consonants follow fricatives or semi-vowels, the Yamas leave them, just as the relations of a dead man retire after leaving his corpse in the burial ground, or just as an elephant retreats at the sight of a lion. This prohibition was evidently based on observation of contemporary phenomena among the dialects. First, as regards Yamas in general. That there was actually a strong tendency for the insertion of Yamas among certain Sanskrit-speaking areas even in ancient times, has been pointed out by the Ṛg Prāt.[4] in the chapter on mistakes in Sanskrit pronunciation. This authority states that some people erroneously pronounce two Yamas in the group labial plosive+nasal consonant; thus *tṛpṇuta* was said to be pronounced as *tṛpp̃p̃ṇuta*, *āpnānam* as *āpp̃p̃nānam*, *aubhnāt* as *aubbh̃bh̃nāt*. What the author had really observed in the so-called 'two' Yamas was probably a particularly strong nasality during the release of the plosive. Secondly, as regards the articulation of the prohibited Yama in the group fricative+nasal consonant, the same authority[5] states that some people erroneously pronounce a Yama

1 For several other consonant-groups, cf. Pischel, p. 191.

2 *na vāyuṃ hamasaṃyoge nāsikābhyāṃ samutsṛjet.* Fol. 4.

3 ŚS, p. 33: *pañcamāḥ śaṣasair yuktā antasthair vāpi saṃyutāḥ, yamās tatra nivartante śmaśānād iva bāndhavāḥ* (or another reading) *siṃhaṃ dṛṣṭvā yathā gajaḥ.*

4 XIV. 22: *pakāravargopahitāc ca raktād anyaṃ yamam.*

5 XIV. 10: *paraṃ yamaṃ raktaparād aghoṣād ūṣmāṇaṃ vāghoṣiṇas tatprayatnam.*

after a fricative when a nasal consonant follows—e.g., in *priśśnih*, *viṣṣṇuḥ*, *ssnātvā*. And a reference to Pāli will prove how nasalization had affected even fricatives. Thus Pāli has *uṇha-* for *uṣṇa-*, *amhanā* for *aśmanā*, *pañhā* for *praśna-*, *nahāyati* for *snāyati*. These examples indicate which way the tide was turning and the circumstances which led the Vāj. Prāt. to bow to the facts and to lay down that the Yama belonged to the preceding syllable, although it had led the Śikṣās to prohibit the nasalization of fricatives, which they presumably condemned as provincialism. And yet, it seems that this prohibition was phonetically harder in the case of fricatives than it would have been in the case of plosives, for once the tendency to nasalize consonants has started, it is easier to open the nasal cavity in the articulation of fricatives—which require less closure of articulating organs—than of plosives. Thus the greater convenience of opening the nasal cavity during the articulation of fricatives can be best illustrated by the change which Sanskrit nasal consonants have undergone before the hissing fricatives: cf. *upayam+syate = upayaṃsyate*, *mansyate = maṃsyate*; the nasal consonants here have become Anusvāra, and have wholly or partially lost their occlusion, the nasal cavity being more open in the case of the Anusvāra. A similar change has occurred in Lithuanian: cf. *kándu*, 'I bite', fut. *kāsiu*, infin. *kāsti*; *minti*, 'to step', fut. *mīsiu*, *siuncū*, 'I send', fut. *siũsiu*, inf. *siũsti*. The nasal consonant in these examples has been changed into a nasalized vowel.

Syllabication of the Anusvāra.

The Anusvāra, according to the Ṛgveda Prāt., belongs to the preceding syllable. Thus the Anusvāra in *aṃśúnā* will belong to the preceding vowel *a*, and the syllabic division will thus be *aṃ-śú-nā*.

The syllabic position of the Anusvāra seems prima facie to be quite simple, for if Anusvāra was a nasalization of the vowel, it must form part of the syllable containing that vowel. But the case is not so simple as it appears to be. For grammatical authorities in India were far from unanimous regarding the nature of the Anusvāra. If Anusvāra was a pure nasalized vowel, as in French *bon* (*bõ*), *pain* (*pẽ*), *dans* (*dã*), etc., then even the question of its syllabic position could not arise, for in that case it formed an independent syllable, complete by itself, strictly according to the definition of the syllable (*akṣara*) as given by the Pāriśikṣāṭīkā—viz., that which does not move, i.e. which stands

alone. But if the Anusvāra was not a pure nasalized vowel, but contained, in a more or less degree, a consonantal element, then it was quite open to the question whether it belonged to the preceding or the succeeding syllable. The consonantal element, if intervocalic, could be divided between the two vowels, or, if pronounced with sufficient prominence, and if followed by a syllable with a strong stress-accent, could go with the succeeding syllable, as in Prākrit *tāṃ anu*, *māṃ attha*, or, if followed by a consonant and pronounced with sufficient prominence, could form even an independent syllable, like the Anusvāra in *vāsā́ṃsi* in the Kāṭhaka school, which, according to the statement of the Āraṇya Śikṣā, was an independent syllable.[1] Again, if Anusvāra had a weak consonantal element, but was followed by a consonant, and nasalized the preceding vowel at the same time, it could serve as a glide sound between the preceding vowel and the succeeding consonant; its on-glide in that case would pertain to the preceding syllable, and its off-glide to the succeeding syllable, as in the Panjabi words *vāṅgā̃*, *bhāṅgī*. Although, then, orthographically written as Anusvāra, it may have been phonetically divided between the preceding vowel and the succeeding consonant.

The question of the syllabication of the Anusvāra is therefore closely bound up with the question of its real nature, and it will be shown in Chapter IX. (on the Anusvāra: cf. p. 154) that both the pronunciations —viz., Anusvāra as a pure nasalized vowel and Anusvāra with a consonantal element—existed side by side; but in the more ancient dialects the Anusvāra had a predominant consonantal element, though in more recent dialects it tended to be a pure nasalized vowel. The syllabication of the Anusvāra, then, may be considered from the following three aspects of the actual pronunciation of the language:

1. Whenever Anusvāra was a pure nasalized vowel and represented the Raṅga (cf. p. 150) of the Śikṣās, the question of its syllabication

[1] *vāsaśśabdād anusvāraḥ kāṭhake nīca iṣyate*. 52.

Com.: *vāsaḥ śabdāt pratīyamāno 'nusvāraḥ kāṭhake pṛthag eva na pūrvāṃśam ity arthaḥ*. Similarly Sarvasammata Śikṣā vivarṇa, II. 38 (MS. Madras, No. 998): *kāṭhakākhye caraṇe vāsaḥ-śabdād uttaro 'nusvāraḥ pūrvasyāṅgaṃ na bhavati*. If the Anusvāra in *vāsā́ṃsi* was an independent syllable, it might have been pronounced with considerable prominence, but it seems to be incredible that only a single word in a whole school was observed to possess the Anusvāra as an independent syllable. Either it was a loan-word from other dialects, or was a typical example representing several words of similar nature pronounced in the same school.

was simple, the nasalized vowel itself forming a complete syllable—e.g., *takrām̐, babhūvam̐* (cf. p. 149) (Atharv. Prāt., IV. 121).

2. In those 'erroneous' but actual pronunciations of the Anusvāra which contained a consonantal element—e.g., when *taṃ ghnanti* was said to have been pronounced[1] as *taṃṅghnanti* or *taṅghnanti*, the syllabication ot the Anusvāra was not so simple. For although even here the first syllable was more likely to have been *taṅ* or *taṃṅ*, as the *ṅ* was not likely to belong to the succeeding syllable (for there exists no word in Sanskrit with an initial nasal+plosive), yet the *ṅ*, if pronounced with sufficient prominence, could have formed an independent syllable, as it was said to be in *vāsā́ṃsi*, or it could possibly have been divided between the preceding vowel and the succeeding consonant. We have, of course no means at present to measure the prominence of this consonantal element as it was pronounced in ancient times, and so are not in a position to specify in what particular words the consonantal element of the Anusvāra could be an independent syllable. At any rate, the mere orthographic position of the Anusvāra could not serve as an absolute guide as to whether it belonged entirely to the preceding or the succeeding syllable, or formed an independent syllable.

3. It will be shown in Chapter IX. (on the Anusvāra: cf. p. 153) that in most of the living dialects the Anusvāra has lost its consonantal element and has become a pure nasalized vowel: cf. Sanskrit *vaṃśa*, but Hindi *bā̃s*, etc. In the case of most of the living dialects, then, the rule of the Prātiśākhyas that the Anusvāra belonged to the preceding vowel can be safely accepted, but it cannot be safely accepted without reservation so far as academic Sanskrit was concerned.[2]

Syllabication of Svarabhakti.

The Svarabhakti, according to Ṛg Prāt. (I. 17), will belong to the preceding syllable. For instance, Uvaṭa quotes Ṛgveda, VI., 75, 4, where we have a phrase *ártnī imé*. Here the Svarabhakti vowel after *r* is heard with a high accent, as it will be a part of the preceding syllable which has high accent.

To the superficial observer it may seem to be an incorrect and at the same time inconsistent observation, on the ground that the addition of another vowel, namely the Svarabhakti, should give another syllable

[1] Ṛg Prāt., XIV. 24.
[2] As regards the syllabic quantity of the Anusvāra, cf. p. 98.

to the word, while it may seem to be inconsistent with the Prātiśākhya's principle that a vowel is the essence of a syllable. But in this age we are not in a position to measure the intensity of Svarabhakti as it was pronounced two thousand years ago. If the Svarabhakti was a mere glide sound, and if its intensity did not exceed the intensity of *r*, it could have belonged to the same syllable.

But a striking point, mentioned by some of the Śikṣās, regarding the syllabication of the Svarabhakti is that Svarabhakti after the svarita accent will be an independent syllable. Why Svarabhakti after the svarita accent formed an independent syllable these authorities do not explain, but the point mentioned may have an important bearing on the origin of Svarabhakti.

In a general form this rule occurs in the Vaidikābharaṇa[1] on Taitt. Prāt., XXI. 15, according to which Svarabhakti after the svarita accent will form an independent syllable. Thus the Svarabhakti in *yád dā̀rśapūrṇamāsaú* (TS, I. 6, 7), *etā́ṃ dáśā̀rṣbhām ā́labhanta* (TS, II. 1, 4), and *dhītíbhī̀r hitáḥ* (TS, IV. 2, 7), will form an independent syllable, as it is preceded by the svarita accent; but not in *ánnaṃ iva khálu vaí varṣám* (TS, V. 4, 9), *etád yajñásya yádukhā́ śīrṣáṇṇ evá* (TS, V. 1, 7), *yajñásyaivá tád barsáṃ nahyati* (TS, II. 5, 7), *sa-śīrṣāṇam evāgníṃ cinuté* (TS, V. 5, 4), in which Svarabhakti follows the low accent.

As counter-example, the Yājuṣabhūṣaṇa quotes Taitt. Brāhmaṇa, I. 1, 6, "*catvā́rā ā́rṣeyāḥ prā́śnanti*," where Svarabhakti is not an independent syllable, as it is preceded by the Udātta vowel *ā́*. This authority also lays down that a Svarabhakti which is at the end of a word does not form an independent syllable; thus in *dóṣāvastor haviṣmatī*, Svarabhakti will belong to the preceding syllable, where *r* is at the end of the word *vastor*. I think this suggestion is interesting, as it implies that in the case of some speakers, whenever there was an infinitesimal pause between the final Svarabhakti and a succeeding word, the Svarabhakti was not intense enough to constitute an independent syllable. For the difficulty of pronouncing the sonant *r* + fricative consonant, without an intervening vowel, was one of the factors that produced the Svarabhakti, and if there was an infinitesimal pause between *r* and the consonant, the difficulty of pronouncing *r* may have been slightly reduced, and only a lax type

[1] *svārāt parā svarabhaktiḥ svapradhānā prakīrtitā. etásya ánurṣadaṃ ceti svatantrā bhaktir iṣyate.*

of Svarabhakti may have arisen—a fact that illustrates the laxity of all finals in Sanskrit. But fluent utterance presumably would not have made any difference as to whether *r* was final or medial.

Another interesting example given by the Yājuṣabhūṣaṇa is *ṛtásyā dhūrṣádam*, where Svarabhakti will be an independent syllable. This phrase occurs in the Taitt. Brāhmaṇa, I. 2, 1-12, and some readings of this passage have actually *dhūruṣádam.*[1] The verse in which this word occurs is:

ghṛtápratīkaṃ ca ṛtásyâ dhūrṣádam
agníṃ mitráṃ ná samidhāná ṛñjate.

The metre in the verse is complete without requiring an additional syllable from Svarabhakti, but as some readings of the same passage have also *dhūruṣadám*, the pāda may have become hypersyllabic, which is not a rare occurrence in Vedic metre. The following examples are said to illustrate the independence of Svarabhakti after a short vowel with Svarita accent:

púnâr havir āsīd ítyāha, yád dârśapūrṇamāsaú.[2]

The commentary on the Āraṇya Śikṣā[3] (MS. No. 867, Madras) gives further details. It points out that after a short vowel with Svarita accent Svarabhakti is not different from a vowel: it does not belong to the preceding syllable, and therefore in some places becomes an independent syllable. Thus Svarabhakti will be an independent syllable in *indri(?)yārṣibhyah, aruṇáḥ kāṇḍārṣyaḥ*; *etádvidhāyāyār(?)ṣir avocat, agnír devátā bráhmetyārṣam, sahásraśīrṣaṃ devám, yád rấtryā ? pāpám*

[1] Cf. St. Pet. Lexicon.

[2] *ṛtásya dhūrṣeti ṛtásyā dhūrṣádam iti svatantrā svarabhaktyudāharaṇaṃ syāt:*

"dīrghāc ca hrasvāt svaritād anantyāt
pṛthag bhaved bhaktir asāṃhitā ca."

dīrghāt svaritāt parā anantyād apadād asāṃhitā bhaktiḥ svarabhaktiḥ pṛthak pratyekaṃ syāt, yathā :—sā́śīrṣāṇam eva, yacchīrṣṇáḥ śīrṣaśáktimān, kóārhati sahásram, yád bā́rhaspatyástenārhati. svaritāt pareti kim :—catvā́ra ā́rṣeyāḥ prā́śnanti. anantyeti kim :—doṣāvastōr havíṣmatī, hrasvāt svaritāt parā svarabhaktiś ca pratyekaṃ syāt :—yathā púnár havir āsīd ity āha, yád dárśapūrṇamāsaú. Pāri. Śik., 129, 130 (Yājuṣabhūṣana). Similarly *Vyāsa Śikṣā :—dīrghāt svārād anantyā ca svarabhaktiḥ pṛthag bhavet.* XXIII. 6.

[3] *"hrasvasvārāt svarābhinnā" ity ādi lakṣaṇaprāptasvarabhaktīnāṃ pūrvāṅgatvaṃ niṣidhya kutracit pṛthaktvaṃ vidhatte :*

"yāgakāṇḍavidhāyordhvam ṛṣibhyo hy arṣayo hy arṣiḥ ityāsraśīrṣakāpūrvam ṛṣaṃ ceti svatantratā." 118, 119.

akārṣam. These examples quoted are apparently from prose passages, and so it would be difficult to test the independence of Svarabhakti therein. The examples *śīrṣam* and *akārṣam* do not seem to be consistent, for the preceding vowels here are long and not short, yet these instances seem to indicate that the rule regarding the quantity of the vowel was not accepted as strictly binding.

According to the Pāriśikṣā Ṭīkā Yājuṣabhūṣaṇa,[1] however (MS. 924, Madras), Svarabhakti both after a short and a long vowel with Svarita accent gives an independent syllable, e.g. in *sáśīrṣāṇam eva* (T. Br., I. 1, 8) *yácchīrṣaṇáḥ* (*sa-*): *śīrṣaśáktimān, kóarhati sahásram, yád bārhaspatyáḥ tenārhati.*

The Vaidikābharaṇa (Taitt. Prāt., XXI. 15) quotes the following verse from the Taittirīya Saṃhitā (IV. 2-7), which also occurs in the Vājasaneyi Saṃhitā (XII. 108):

> *ūrjo napājjātavedaḥ suśastíbhir mándasva dhītíbhír hitáḥ*
> *tve iṣah sáṃdadhur bhūriretasaś citrótâyo vāmájātāh.*

According to the Vaidikābharana, the Svarabhakti after *r* in *dhītibhir hitaḥ* follows the Svarita accent and is an independent syllable. But the verse quoted by the author does not seem to be very satisfactory, for the metre is complete without the need of an additional syllable from Svarabhakti. The metre is Paṅkti, requiring 12×8 syllables, and this is exactly the number of syllables occurring in the line, there being no need of an additional syllable from Svarabhakti. The author, however, has been apparently guided by the traditional record of the metre of this verse in the Chhandonukramaṇī, for according to this work the metre of this verse is Bhurik-Paṅkti, i.e. hypersyllabic Paṅkti, and this additional syllable may be due to Svarabhakti, there being no other vowel or semi-vowel likely to give an extra syllable.

The metre of the above two verses mentioned by our commentators does not therefore prove that Svarabhakti after Svarita, as pronounced by the Vedic poets themselves, gave an independent syllable. It seems to be possible, however, that the commentators' pronunciation of Svarabhakti had itself undergone the change referred to. The probability of the occurrence is somewhat further increased by the later development of the language, in which Svarabhakti has actually

[1] See footnote 2 on p. 85.

emerged as a full vowel, and the Svarita may have been a more favourable condition for this phenomenon. For, as will be shown in the chapter on Accent,[1] the tendency of the Svarita, according to some of the Indian grammarians, was to raise, in certain cases, the prominence of the succeeding sounds. For instance, after a Svarita the quantity of certain consonants was said to be increased, and even the low tone after it became slightly higher. The increased pitch of the Anudātta after Svarita is indicated, to some extent, by the peculiar marking (like Udātta) in the Saṃhitā text. But that it was not mere orthographic marking is further indicated by the fact that the Anudātta after Svarita was given a special designation—viz., *pracaya*—the Nārada Śikṣā[2] enumerating it among the five kinds of accents, while the later Śikṣās term it *dhṛta*,[3] "kept up"—a term significantly indicating that the descending high tone was maintained in some of the succeeding syllables. Moreover, these Śikṣās give special directions on the movement of the hand in the articulation of the *dhṛta* accent. Thus according to the Vyāsa Śikṣā,[4] in the pronunciation of the *dhṛta* accent the tip of the thumb was to be directed towards the middle line of the middle finger.

However conventional these directions may have been, they show that the Pracaya accent was a reality, and not a mere convention.

Though the scansion of Vedic metre, then, does not seem to confirm the views of the Śikṣās on this point, yet the above facts indicate that their observations were not fanciful, but had some basis presumably in the pronunciation of their own day.

[1] See p. 168.

[2] ŚS, p. 422: *Udāttaś cānudāttaś ca svarita-pracite tathā nighātaś ceti vijñeyaḥ svarabhedas tu pañcadhā.*

[3] Cf. the Vaidikābharaṇa on Taitt. Prāt., XVIII. 3, which speaks of *dhṛta* as a synonym for *pracaya*.

[4] XVIII. 1:

kaniṣṭhānāmikā-madhyā-tarjanīṣūttame kare,
nīca-svāradhṛtodāttān aṅguṣṭhāgreṇa nirdiśet.

Com.: *nīcādisvarān kramād aṅgusthāgreṇa nirdiśet madhyamāṅgulyā madhyare khāyaṃ pracayam.*

CHAPTER III

Syllabic Quantity

The treatment of syllabic quantity in Indian grammatical works is meagre, but it was probably justified. For syllabic quantity cannot be really considered apart from syllabic division, quantity being itself an element of that division. If, in actual speech, the grammarians had observed the division of the word commonly written *putraḥ* as *put/traḥ*, that division by itself implied that the quantity of *t* was long enough to require a break in the middle of it. A separate treatment of syllabic quantity was therefore unnecessary, and permissible only for conventional convenience. Moreover, deviations from the general rules of syllabic quantity have been often met with in Sanskrit and Prākrit prosody. There is no doubt that the deviations had also a phonetic basis, and could not be exclusively attributed to metrical license; but as the psychological element also plays a conspicuous part in rhythm, the treatment of these deviations belonged more to metrics than to phonetics.

The general principle of syllabic quantity presumably depended upon duration, which was said to be the basis of quantity (see p. 170). This is indicated by the Ṛg Prāṭ.'s observation that "a long vowel is a long syllable, but the syllable becomes longer if it is followed by a consonant."[1]

According to this authority, then, it was not the vowel that constituted the lengthened syllable, but the group vowel+consonant. And this was a sound observation, free from the error of the Greek grammarians who supposed that a short vowel by nature became long by position before a consonant-group.[2] They ignored the fact that it was the syllable, not the vowel, that was lengthened. Of course, if the Ṛg Prāt. implied that a long vowel+consonant was necessarily

[1] Ṛg Prāt., XVIII. 20:

guru dīrghaṃ garīyas tu yadi savyañjanaṃ bhavet.

[2] Roudet, "Éléments de Phonétique générale," p. 235.

longer than the long vowel without consonant, the opinion cannot be accepted in all cases, for the succeeding consonant in some cases may slightly shorten the long vowel. Nevertheless, the spirit of the observation, that the syllable, and not the vowel, became longer, was apparently valid. The consonant made it a longer syllable, because, according to their theory, the syllable then required longer duration.

As regards the general duration of a syllable, the short syllable was said to have one mora, and the long syllable, two moras.[1] This was, strictly speaking, an inaccurate measurement in several cases, for according to this standard the syllable *spṛ* in *spṛhā*, which was counted as short, had only a single mora, and was thus inconsistent with even the Indian theory of quantity, according to which the group *spṛ* ought to have $\frac{1}{2}$ (for *s*)+$\frac{1}{2}$ (for *p*)+1 (for *ṛ*)=2 moras. And the conventional nature of this standard was admitted by the author of the Vṛttamuktāvalitarala, a manuscript work in the India Office.[2] He says, "By a conventional tradition the quantity of a long syllable is measured as two moras, which are attributed even to the *pluta* vowel (that has three moras). In the same way, although the quantity of a consonant is a half-mora, a syllable ending in a consonant is measured two moras. That a consonant should not increase the quantity of the syllable is due to convention."[3] The author here evidently points out the limitations of this standard of quantitative measurement, but the difficulty mentioned by him does not affect the general theory of syllabic quantity advanced by the Ṛg Prāt. as mentioned above—viz., that a consonant did increase the length of the syllable. A uniform standard of 1:2 served only as a rough working basis for syllabic measurement, when more delicate instruments were not available, and with this rough standard, the half-mora of a consonant was, in practice, either neglected. as in *spṛhā*, or, when necessary, measured as a full mora, as in *at*. Moreover, it is probable that the rule referred to the actual duration of audition, which often does not exactly correspond to Kymographic tracings (cf. p. 91). Again, that this conventional standard was not carried too far is indicated by another work, the

[1] Piṅgala, Chhandaḥ Śāstra, 8-19: *sa gakāro dvimātro dvau laghūkṛtvā gaṇanīyaḥ.*

[2] No. 1713*b*.

[3] Folio 1: *gurur dvimātra eva gaṇanīya iti sampradāyāt pluto 'pi gurur dvimātra eva gaṇyate . . . evaṃ vyañjanaṃ tv ardhamātrakam ity uktisatve 'pi vyañjanāntadīrghaś che tasmād ityādau na gaṇabhaṅgaḥ, vyañjanāntasyāpi guror dvimātratvenaiva gaṇanāt . . . vyañjanena ca varṇādhikyam na bhavatīti sampradāyāt.*

Sarasvatīkaṇṭhābharaṇa. It points out an exception to the rule that a short vowel+consonant-group makes a long syllable. It states that in quick utterance a consonant-group may not make position, and in that case "there is no breach of metrical rhythm."[1] Thus it illustrates the following Prākrit verses:

jaha hṇāuṃ oiṇṇe abbhantaṃ ulhāsiaṃ aṃsu-addhantaṃ
taha a nhāāsi tumaṃ sacche golāṇaitūhe.[2]

Here the consonant-groups *nh* and *lh* did not make position, and there was said to be no breach of metrical rules if the consonants were quickly pronounced. Metre Āryā.

The ultimate basis of syllabic quantity, then, was recognized to be phonetic duration, even by the rigid authorities on classical metre.

[1] *yadā tīvraprayatnena saṃyogāder agauravam, na chhandobhaṅgam ity āhus tadā doṣāya sūrayaḥ.* Kāvyamālā Ed., p. 103.

[2] Sanskrit version:

yathā snātum avatīrṇe ārdrībhūtam ullāsitam aṃśukārdhāntam,
tathā ca snātā bhavasi tvaṃ svacche godānadītīrthe.

CHAPTER IV

Rules of Syllabic Quantity

On the basis of the general principle of syllabic quantity examined above, Indian grammarians and metricians have given the following detailed rules of syllabic quantity:

Rule I.—(*a*) A short vowel is a short syllable, but a short vowel with a consonant is a longer syllable, though it still deserves the designation of a short syllable. According to this rule, then, both *a* and *da* were short syllables, though *da* was a little longer.

(*b*) A long vowel is a long syllable, but a long vowel with a consonant is a longer syllable.[1]

The conventional nature of these rules has been pointed out above. That a consonant+short vowel or consonant-group+short vowel should be always counted as a short syllable seems to be somewhat arbitrary. For the actual length of consonant+short vowel must have varied with different persons and dialects. Nevertheless, these rules indicate that they were ultimately based on a phonetically sound principle of syllabic quantity. For they seem to refer to the actual duration of audition (see p. 89), and show that long and short vowels did not mean orthographically long and short, but those *pronounced* long and short respectively.

The fact that these rules had a phonetic basis has an important bearing on the theory of Indian metrics. The so-called "metrical license" is based on the psychological mood of the composer or the poet, who, if not tied down by rigid rules, can intend any vowel to be *pronounced* short or long, although he has to write them short or long according to usage. Striking examples of this may be met with in Buddhist Sanskrit prosody, in which we sometimes find the metrical

[1] Ṛg Prāt., XVIII. 20: *gurur dīrghaṃ garīyas tu yadi savyañjanaṃ bhavet. laghu savyañjanaṃ hrasvaṃ laghīyo vyañjanād ṛte.*

(i.e. phonetic) quantity of vowels different from their orthographic quantity. The following instances may be quoted:

(*a*) Rāṣṭrapālaparipṛcchā, page 8, line 19:

prajñāsāgarakathaṃ viśudhyate.

Here the second syllable *jñā* is written long, but pronounced short; the metre being Rathoddhatā, in which the second syllable is always short.

(*b*) Ibid., page 15, line 3:

śuśrūṣakāḥ sada bhavanti guruṣu nityam.

Eleventh syllable *ru* written short, pronounced long. Metre Dodhaka. The author here presumably follows the actual *Prākrit pronunciation, in which the vowel before* su *was usually long.*[1]

(*c*) Ibid., page 2, line 20:

śrāvakabuddhasutān merutejāḥ.

Eighth syllable *me* written long, pronounced short. Metre Dodhaka.

(*d*) Ibid., page 4, line 8:

stutyamayā rūpasāgarabuddhim.

Fifth syllable *rū* long for short. Metre Dodhaka.

(*e*) Ibid., page 6, line 7:

bodhisatvagaṇāḥ śrāvakās tathā.

A remarkable example: sixth syllable *ṇāḥ*—long vowel with visarga—for short. Metre Rathoddhatā.

The above examples, however, are not typical, because they are taken from artificial Buddhist poetry.

As regards *e* and *o*, Indian metricians[2] have observed that these vowels in Prākrit metre are sometimes short.

As regards Vedic metre, the Ṛg Prāt. gives us no explanation of the quantitative variations in the Ṛgveda. Its only general observation is that in metres of eight and twelve syllables the last syllable but one tends to be short—a fact confirmed by the investigations of Arnold.[3]

[1] I owe the suggestion to Professor H. Jacobi.

[2] Cf. Vāṇībhūṣaṇa, I. 6; Prākrit Piṅgala, I. 4, and the examples quoted there.

[3] "Vedic Metre," p. 109; Ṛg Prāt., XVII. 22.

Regarding the phonetic, as opposed to orthographic, basis of syllabic quantity, there occurs an interesting observation in Prākrit Piṅgala. It states that "if the tongue articulates even a long vowel as short, it *is* short, and even two or three syllables, when quickly uttered, should be taken as one."[1] And even in the rigid classical metre, Piṅgala's rule[2] is well known that a short vowel at the end of a pāda is taken as long when metrically necessary. In this connection some metricians have pointed out a divergence which the MS. work the Vṛttamuktāvalitaralā explicitly attributes to phonetic reasons. It states that this syllabic lengthening of the short vowel (at the end of a pāda) occurs only in certain metres, as Indravajrā, Vasantatilakā, etc., but not in other metres, as Vaṃśastha, Indravaṃśa, etc. In metres of the latter type, says the author, the lengthening does not occur because "the rhythm (lit. 'connection') is broken (lit. 'loosened'). . . . But the breach or non-breach of rhythm is a matter in which one's own *pronunciation* is the judge."[3] In other words, the author here maintains the *phonetic* basis of rhythm. Again, in connection with this point, the psychological element of rhythm has been pointed out by Hemacandra in his Chhandonuśāsana,[4] who quotes an authority to the effect that in certain metres the lengthening in question "is not so agreeable to the ear." This line of demarcation, maintained by Hemacandra, Śvetapaṭa, and several other metricians is combated by Halāyudha,[5] who states that the lengthening in question is not restricted only to certain metres, and that "it is only an exception to the general rule." And even that rigid classical poem, the *Śiśupālavadha*, does not follow this restriction.[6]

[1] Verse 5:

jai dīho via vaṇṇo lahu jīhī paḍhai so vi lahu,
vaṇṇo vi turia paḍhio do tiṇṇi vi ekka jāṇehu.

Note the examples given there.

[2] I. 22.

[3] India Office, 1713*b*, Folio 2: *pādānte laghus tu vaṃśasthendravaṃśasthādibhinneṣv indravajrādiṣv eva gauravaṃ labhate, na punar vaṃśasthādiṣv api bandhaśaithilyāt . . śaithilyāśaithilye ca svoccāraṇasākṣike.*

[4] Page 1 (commentary): *vaṃśasthakādi-caraṇānta-niveśitasya gatvaṃ laghor na hi tathā śrutiśarmadāyi.*

[5] On Piṅgala, I. 10.

[6] Ibid. I may refer to the fifth chapter of this epic, in which such lengthenings are very common: cf. V. 64. 65, etc.

The syllabic quantity of the vowel, then, under certain conditions, could be adapted to metrical requirements, both in primitive and middle Indian.

Rule II.—A short vowel before a consonant-group makes a long syllable.[1]

The validity of this rule will be evident from the copious examples given in the chapter on Syllabic Division. The doubling shown by MSS. and the living dialects indicates that a vowel+consonant-group gave a long syllable. Moreover, compensatory shortening of vowels in Pāli, as in *amacce*, further corroborates the rule.

Again, the evidence of metre, on the whole, confirms the same phenomenon, for a consonant-group, both in Sanskrit and Pāli, generally tends to make position after a short vowel. The metricians,[2] however, have pointed out several exceptions, as in the case of consonant-groups *pr* and *hr*. But these exceptions are more frequent in Pāli and Prākrit —and in Buddhist Sanskrit poetry, which was practically Prākrit masquerading as Sanskrit—and therefore there is considerable truth in the remark of the MS. work the Vṛttaratnākarādarśa that "these exceptions concern only dialects like Prākrit."[3] Thus in the Śisupālavadha, the consonant-group *pr* occurs 147 times after a short vowel, but it has not even once failed to make position.[4] The consonant-group *hr* occurs twice after a short vowel in the same work;[5]

[1] Ṛg Prāt., I. 14; Taitt. Prāt., XII. 14.

[2] Bollensen, ZDMG, Vol. XIV.; Meillet, MSLP, Vol. XVIII.

[3] India Office, 1535*b*, Folio 6: *iyaṃ ca paribhāṣā prākṛtādibhāṣāyām eva . . . vastutas tu sūtrādigrantheṣv anuktatvāt saṃskṛta-bhinna-viṣayam eveti yuktam.*

[4] I. 12, 13, 23, 44. II. 54, 56, 64, 4, 8^2, 15, 18, 19, 34, 36, 37, 38, 55, 63, 64, 66, 67, 89, 92, 110. III. 1^2, 5, 33, 36, 37, 41, 44, 52^2, 53, 54^2, 58, 64^2, 67, 70, 78, 81. IV. 3^2, 5, 11, 27^2, 35, 49, 55, 58. V. 4, 12, 22, 25, 27, 28, 36, 43, 54, 67^2, 69. VI. 7, 25, 62, 66, 76, 77. VII. 7, 10, 21, 23, 29, 42, 68, 71, 74. VIII. 4, 6, 16, 24, 25^2, 27, 32, 35^3, 37, 38, 40, 44, 45. IX. 1, 8, 18, 20, 26, 30, 37, 42, 43, 48, 50, 55, 63, 69, 71, 79, 84, 77. X. 3^2, 10, 14, 15, 20^2, 22, 37, 44, 60, 63, 65, 83. XI. 6, 9, 13^3, 22, 27^2, 39, 48, 54, 57, 59, 60, 67. XII. 5, 14, 29, 31, 50, 51, 72, 76. XIII. 3, 6, 12, 19, 30, 31, 37, 43, 44, 48^2, 57. XIV. 6, 7, 22, 25, 29, 30, 36, 49, 50, 73, 74, 79, 81, 85. XV. 11, 19, 27, 32, 35, 73, 86. XVI. 1, 15, 17, 21, 37, 56, 65, 75. XVII. 3, 9, 11, 20, 34, 38, 42, 44, 49, 50, 51, 52. XVIII. 3, 5, 15, 18, 28, 30, 34, 38^2, 44, 45. 46, 47, 49^2, 52, 54, 58, 62, 63, 67, 76, 78. XIX. 6, 7, 8, 37, 111, 116. XX. 4, 10, 18, 19, 35, 38, 41, 44, 48, 58, 71, 72, 76.

[5] V. 29, X. 60.

it has not made position once, as the metricians have pointed out.[1] But even here, as the Vṛttaratnākarādarśa[2] states, the commentators have corrected the line (in X. 60) by changing *nābhihrada-* into *nābhinada-*.

Consonant-Groups in Buddhist Skr. Prosody.

While consonant-groups in classical Skr. prosody on the whole rigidly make position, Buddhist Skr. prosody shows considerable license in this direction. I undertook in this connection a special study of consonant-groups which do not make position in Buddhist Skr. prosody, and the following are the results of my investigation:

Besides several consonant-groups of this nature which Jacobi[3] and Hopkins[4] have discovered in the Rāmāyaṇa and the Mahābhārata—e.g., *pr* (being the most common[5]), *kṣ* (next in order of frequency[6]), *śr*, *tr*, *kr*, *dr*, *br*, *vy*, *bhr*, and *ddh*—the following additional consonant-groups not making position in Budd. Skr. prosody may be mentioned:

1. *sr*, Rāṣṭrp., page 46, line 16:

sṛjati ca sahasraṃ vai raśmi-koṭīr anantān.

sr in *sahasram*[7] does not make position: metre Mālinī.

2. *ṣy*, Rāṣṭrp., page 17, line 17:

pañcasu te gatiṣu bhramiṣyanti.[8]

Ninth short; metre Dodhaka.

[1] Bollensen, *op. cit. ad loc.*

[2] Folio 6: *prāptanābhihrada . . . iti māghapadye chandobhaṅgabhaṅgārthaṃ hrada-śabdam apanīya nadaśabdodayaḥ.* Tārānātha's Edition (p. 487) actually reads *nābhinada-*, and though Mallinātha reads it as *hrada-* he converts it into *nada-*: "*nābhir eva nado hradaḥ.*"

As regards examples from Kālidāsa and Bhāravi, cf. Bollensen, *op. cit.*

[3] *Rāmāyaṇa*, p. 25 ff.

[4] "The Great Epic of India," p. 242 ff.

[5] E.g., in the Śikṣā-samuccaya, page 108, line 11; 112, 2; 114, 7; 111, 14; 4, 13; 17, 1; 4, 2; 44, 9. Rāṣṭrapāla-paripṛcchā, 3, 12; 53, 7, etc.

[6] E.g., Śksm., page 115, line 19; 218, 5; 115, 15; 115, 6; 112, 15; 1, 2; 5, 5.

[7] Professor Jacobi suggests to me that *sahasa-* is a common form in Apabhraṃśa, but it is possible that the pronunciation of *ṣy* in *bhrami-ṣyanti* and *sr* above was transitional, in some dialects, to its change into *h* through *undoubled s*, and the syllabic division *bhrami-syanti* may have been an indication of this tendency (cf. the remark of the Varṇa Śik. on non-doublement of *s*; see p. 113).

[8] Professor Jacobi here suggests that the poet had in his "mental ear" the Prākrit form *bhamihanti*.

3. *ṣṭh*, Rāṣṭrp., page 53, line 4:

pratiṣṭhāpayasyapi jagad bhagavan.

Second short; metre Pramitākṣarā.

4. *nn*, Śksm., page 106, line 13:

bhavaty asau tatpravaṇas tannimnaḥ.

Ninth short; metre Upendravajrā.

5. *rh*, Śksm., page 93, line 6:

ye cāpi kecit tarhi śikṣamāṇāḥ.

Sixth short; metre Indravajrā.

6. *sm*, Śksm., page 103, line 2:

maitri-sneha-smṛti-bhājanaṃ dṛḍham.

Fourth short; metre Rathoddhatā.[1]

7. *sph*, Śksm., page 298, line 7:

śreṣṭhī-kuleṣu sphīteṣu.

Fifth short; metre Anuṣṭubh.

8. *sp*, page 204, line 5:

śubha-gandha-rasair vara-sparśa-sukhaiḥ.

Eighth short; metre Toṭaka.[2]

9. *sn*, Rāṣṭrp., page 50, line 11:

mṛdu-cāru-snigdha-śubha-keśa-nakhā.

Fourth short; metre Pramitākṣarā.[3]

10. *sth*, Śksm., page 153, line 4.

jātyandhya-daurbalyam athālpa-sthāmatām.

Ninth short; metre Indravajrā [4]

[1] Further example in Rāṣṭrp., page 7, line 13.
[2] Further example in Rāṣṭrp., page 9, line 5.
[3] Further examples in Śksm., page 103, line 2; 259, 1; 204, 5.
[4] Further examples in Śksm., page 205, line 15; 102, 3; 53, 12.

11. *sk*, page 258, line 4:

tatha imi (?) *vidu-skandha-prekṣamāṇaḥ.*

Sixth short; metre Puṣpitāgrā.

12. *sv*, Rāṣṭrp., page 7, line 12:

dharma-svāmi praṇamāmi nāyakam.

Second short; metre Rathoddhatā.

13. *dhy*, Rāṣṭrp., page 5, line 15:

kṣānti-vīrya api dhyāna-śikṣitaḥ.

Sixth short; metre Rathoddhatā.

14. *cy*, Śksm., page 204, line 1:

naṭa-raṅga-samā jagi-janma-cyutiḥ.

Tenth short; metre Toṭaka.

15. *tv*, Śksm., page 259, line 8:

tatha tvaya (?) *dṛṣṭa maharṣi-sarva-dharmāḥ.*

Second short; metre Puṣpitāgrā.

16. *gr*, Śksm., page 47, line 7:

sad-dharma-prati-grāhakāḥ.

Fifth short; metre Anuṣṭubh.

17. *jñ*, Śksm., page 3, line 11:

varddhani-jñāna-viśeṣa-sukhānām.

Third short; metre Dodhaka.

There is no doubt that most of the above consonant-groups stand in the beginning of a word (separate or member of a compound), and we know that in Prākrit the initial consonant-groups of Skr. were generally simplified (Pischel, p. 185). When, therefore, *gr* in *prati-grāhaka-*, *jñ* in *jñāna-*, *sm* in *smṛti-*, etc., did not make position, they represent that stage of the language when they began to be pronounced like *gāhaka-*, *ñāṇa-*, *sṛti*, etc. Moreover, the actual pronunciation of *ṣy* and *sr* in the suffixal position, as shown above, may have been *h* and *s*. Nevertheless, it is more probable that these laxities in syllabi-

cation represent a transitional stage to Prākrit pronunciation proper in the language of the more educated Buddhists. For several other consonant-groups are apparently cases which do not indicate the influence of Prākrit (cf. *rh* in *tarhi*, *ṣṭh* in *pratiṣṭhā-* *nn* in *tannimnaḥ*, in the above examples). They may indicate that the pronunciation of Buddhist literary Skr. tended to go the same way as Prākrit did, perhaps centuries before the date of these compositions.

Again, the group fricative+plosive not making position, as in *skandha-*, *sparśa-*, *pratiṣṭhā-*, etc., seems to confirm my theory (see p. 75) that in syllabic division the fricative of this group tended, in actual pronunciation, to belong to the succeeding syllable.

Rule III.—A short vowel+Anusvāra makes a long syllable.[1]

This rule does not require a lengthy comment. From pages 82, 83 ff. it will be clear that all depended upon the nature of the anusvāra, the pronunciation of which varied with different dialects.

The rule is generally confirmed by Skr. metre, where anusvāra makes position. But, according to the author of Prākṛta Piṅgala,[2] anusvāra of the less prominent type, called the *bindu*, sometimes did not make position.

[1] Ṛg Prāt., I. 14 *ad loc.*

[2] I. 4 Cf. the examples given there.

CHAPTER V

Doubling

As regards doubling, three different views current among Indian grammarians may be mentioned:

1. The first view, according to the statement of the Ṛg Prāt.[1] and Pāṇini,[2] was held by as ancient an authority as Śākalya, who asserted that doubling never took place. It is not decidedly clear from the phraseology of the Ṛg Prāt. and Pāṇini whether Śākalya was referring to phonetic or merely orthographic doubling. If Śākalya meant thereby that phonetic doubling never occurred in Sanskrit, he was wrong, as has been shown in the above pages from the evidence of the living dialects. The doubling in Pāli and Prākrit would not have taken place had not Sanskrit as a spoken language paved the way for it. Secondly, the assertion "never" was incredibly sweeping. The actual existence of spontaneous doubling in Sanskrit, Prākrit, and some of the modern vernaculars disprove Śākalya's dogmatic statement. Thirdly, ancient inscriptions and manuscripts would not have transcribed double consonants if they had never been pronounced double. If, however, Śākalya found doubling so predominant in Sanskrit, that he thought it unnecessary to transcribe it orthographically, his view might be acceptable, though it could not serve as a guide to succeeding generations. Śākalya's prohibition was presumably an admonition against excessive tendency to doubling actually existing in certain dialects of his time.

2. The second view, represented by all the Prātiśākhyas[3] and some of the Śikṣās, lay on the other extreme. It required the first member of every consonant-group to be doubled when it was preceded by a vowel (*adya*=*addya*, *mukta-*=*mukkta-*), with a few exceptions to be

[1] VI. 3: *saṃyuktaṃ tu vyañjanaṃ śākalena.*

[2] VIII. 4, 51: *sarvatra śākalyasya.*

[3] Ṛg Prāt.: *svarānusvāropahito dvir ucyate saṃyogādiḥ.* Taitt. Prāt., XIV. 1; Atharv. Prāt., III. 28; Vāj. Prāt., IV. 100. Vyāsa Śikṣā: *svarapūrvam iyād dvitaṃ vyañjanaṃ vyañjanottare.* Varṇaratna-dīpikā Śikṣā, ŚS, p. 130.

detailed below. And it has been amply demonstrated above that the evidence of the living dialects corroborates the fact that this tendency for doubling was predominant in spoken Sanskrit, but the divergent tendencies, however secondary, illustrated in the above pages by the Prākrit word *rāī* for *rātri-*, and Oṛiya *puā* for *putra-*, show that the extremist view held by the Prātiśākhyas was not applicable to all the spheres of Sanskrit pronunciation.

3. The middle course was adopted by Pāṇini,[1] in whose opinion consonants, under the conditions similar to those laid down by the Prātiśākhyas, may be optionally doubled. This view indicates that Pāṇini had noticed the existence of both the tendencies, though the option mentioned by Pāṇini is indefinite, and does not show which of the two tendencies was more predominant, and where each particular tendency could be located.

Intervocalic Double Consonants.

As regards the pronunciation of intervocalic double consonants, the Vāj. Prāt.[2] states that they should be pronounced as single—e.g., *kukkuṭaḥ* should be pronounced as *kukuṭaḥ, dattaḥ* as *dataḥ*.

The author attributes it to the repression or dhāraṇa of the first consonant. And, as will be pointed out in the next chapter (cf. pp. 131, 132 ff.), the author's view is consistent with the predominant tendency for lax articulation of intervocalic consonants among Indian dialects. But, as will be shown presently, the strong doubling of intervocalic consonants in some of the modern dialects and the not infrequent traces of original doubling in literary records indicate that the view of the Vāj. Prāt. was not applicable to all the spheres of Sanskrit pronunciation. That the pronunciation of intervocalic double consonants was variable was correctly noticed by the Vasiṣṭha Śikṣā. This Śikṣā states that wherever there is a doubling between two vowels, its actuality can be determined only from a particular pronunciation, and cannot be brought under a definite rule.[3] There is no doubt that this remark of the Śikṣā cannot be accepted without reservation, and that by closer observation of phonetic phenomena the author may

[1] VIII. 4, 45, 50.

[2] IV. 142: *dvivarṇam ekavarṇavad dhāraṇāt svaramadhye samānapade.*

[3] *Yat kvacit svarayor madhye dvitaṃ pūrvāgamopi vā uccāraṇādinā spaṣṭaṃ tad atra na vidhīyate.* Quoted by Professor Lüders in *Vyāsa Śikṣā*, p. 18.

have discovered a number of definite divergent tendencies which could be brought under a set of definite laws, if not under a single rule. But, nevertheless, the Śikṣā is right in pointing out the actual existence of these divergent tendencies. Some of these particular data of intervocalic doubling have been mentioned by the Sarvasammata Śikṣā,[1] which states that sometimes an additional *b* is added to *bhuj* after the prefix *pari*, so that *pari*+*bhuj* becomes *paribbhuj*, and sometimes an additional *k* is added to *khid* after a prefix—e.g., *ākkhidate*, *prakkhidate*. Similarly, continues the Śikṣā, sometimes intervocalic double consonants are pronounced double as they are orthographically written, as in *attā havīṃṣi, annapate, addhi.*

Original Doubling of Intervocalic Consonants.

The above point, then, leads us to the question whether there are any traces of original doubling of intervocalic consonants in Sanskrit. In the chapter on the Syllable I have pointed out that as a general rule consonants are doubled in Sanskrit only when members of a consonant-group, and I am of opinion that the original doubling of consonants in intervocalic position is a scarce phenomenon in Sanskrit. This original or spontaneous doubling should not be confused with two similar consonants in conjunction, as in *dattam*, *āttam*, in which the consonant *t* has not been doubled; here we have rather two *t*'s of different syllables coming in conjunction. An investigation into this matter has led to the following conclusions.

Doubling of Intervocalic Consonants in the Vedas.

There does not appear to be any conclusive evidence of original doubling in the Vedas. In the Ṛgveda there are three words, *ciccikáḥ* (name of a bird) (X. 146, 2), *jájjhatīriva*[2] (sounds of the waters), and the oft-quoted *akhkhalīkṛtya* (the sounds of frogs), which are onomatopœic words, and so might well represent two consonants put into conjunction rather than original doubling. It may be suspected in the word *píppalam*, though grammarians[3] derive it as an irregular intensive form of the verb *plu* or *pṝ*. But there are no indications of any general

[1] Franke's Edition, 6, 7. Cf. Taitt. Prāt., XIV. 8.

[2] Benfey ("Vedica," pp. 137-8) traces it to *has*, through *jaghas* (indg. **ĝzh*). In either case it is not original doubling.

[3] Cf. Devarāja Yajvā's remarks on the *Nighaṇṭu*, p. 102 (Satyabrata Sāmaśramī's Edition).

tendency to original doubling in the Ṛgveda. Similarly, in the Yajur Veda there seem to be only five words which prima facie indicate *original* doubling. These words are *vṛkkā́bhyām* (XXV. 8), *tittirī́n* (XXIV. 18), *kukkuṭā́ḥ* (I. 16), *kakkaṭā́h* (XXIV. 32), and *pilippilā́* (XXIII. 12). And yet a moment's reflection will show that these cases are not cases of doubling, but of two independent consonants happening to come side by side. The first is probably formed from the root *vṛk*+the suffix *k*;[1] the next three, being names of birds or animals, represent onomatopœic sounds as in 'cuckoo,' while *pilippilā́* is a doubling of the word *pili* with an intervening sound *p*. Other doublings in the Yajur Veda are either clear cases of assimilation or of two consonants coming side by side—e.g., in *golā́ttikā* (XXIV. 37), which is formed by the addition of the suffix *tik* to *lat*, after the analogy of *kṛttikā*, *bhittikā* (*vide* Uṇādi Sūtras, III. 147). In the Sāma Veda a single word *jyókkaḥ*, 'long' (II. 9-13, 3), may indicate such doubling, but the original form of the word being *jyot* (cf. Nighaṇṭu, I. 16, where *dyotate—jyotate* are put side by side), this may be the result of the assimilation of *t* to the succeeding suffix *kas*.[2] Similar remarks may apply to four words in the Atharva Veda—viz., *pippalam* (IX. 14, 20), *pippalī́* (VI. 109. 1), *píppati*[3] (XX. 136, 7), and *vṛkkaú* (VII. 101, 1).

The Brāhmaṇas.

There occur a few interesting forms in the Aitareya Brāhmaṇa which give indications of dialectic borrowings of words with original doubling. The first is *sammā* (XI. 1)=*samā*, 'equal,' on which the commentator remarks, "the second 'm' in *sammā* is Vedic (*chāndasaḥ*),"[4]—a stock explanation of commentators whenever they are unable to find grounds for a linguistic or grammatical irregularity. The commentator is evidently wrong, because, as the above facts will indicate, there are no indications of such doublings in the Vedas. The doubling, then, is not Vedic, but either a dialectic borrowing or a suffixal extension of *sam* (+*mā*). Another word occurring in the same chapter of

[1] Even if *kk* here is an assimilation of *tk*, as indicated by Avestan *vortk*, it is not original doubling. But cf. Turner, BSOS, Vol. IV., Part II., p. 369.

[2] More probably, however, *jyókkaḥ* is a suffixal extension of *jyók*, which also occurs in the same Veda, II. 4, 4, 6.

[3] So read the Ajmer Edition as well as the Nirṇayasāgara Index, but Whitney reads *pipyati*, which shows that *pippati*, if correct, indicates Prākritic assimilation.

[4] "*sammā*" *ity atra dvitīyo makāraḥ chhāndasaḥ* (XI. 1).

the Aitareya Brāhmaṇa (XI. 10) is *avaprajjana-*, which means 'the hem of a garment.' The St. Petersburg Dictionary derives the word from *pṛj* or *parj*, a derivation which is not convincing, and which does not explain how *parj*, unlike *varj*, became *prajja-*, with a doubled *j*, unless it was a dialectic borrowing. Another word, *guggulu-* (V. 2), is interesting, not because it manifests original doubling, but because it indicates how Prākritism had begun to affect even the Aitareya Brāhmaṇa. The corresponding word in the Śatapatha Brāhmaṇa[1] and the Atharva Veda[2] is *gulgulu-*, indicating in the *guggulu-* of the Aitareya Brāhmaṇa the assimilation of *l* to the succeeding plosive. Forms like *sammā* and *guggulu* give us a glimpse of the dialectic tendencies in the period of the Aitareya Brāhmaṇa, some indicating original doubling, others showing Prākrit assimilation. Another case of original doubling may be noticed in the Pañcaviṃśa Brāhmaṇa (XIII. 4, 11, 10, 8), viz. in the word "*Alamma*," being the proper name of a man. These sporadic cases are not, of course, indications of a general tendency for original doubling in the Brāhmaṇa period, but they do betray it in some dialects of the period.

The Nighaṇṭu mentions two verbs, *hammati* (II. 14) and *drummati* (II. 14), but as side by side with *hammati* we have another reading *hamyati*, it is possible that the double consonants in both of these verbs indicate mere assimilation. The Nighaṇṭu, therefore, does not offer us any definite data of original doubling.

Some of the collections in Pāṇini's Dhātupāṭha throw interesting light on the subject. It is striking to note that the roots *aṭṭ*, *cuḍḍ*, *aḍḍ*, and *kaḍḍ* are given in the Dhātupāṭha as *aṭṭa*, *cuṭṭa*, *adḍa*, and *kadḍa*, the final cerebral consonant being preceded by a dental, indicating that the cerebral doublings in *aṭṭ*, etc., are really cases of assimilation. But there are several other verbs in the Dhatupāṭha which may contain double consonants. These are, for instance, *bukk*, 'to speak'; *nakk*, *dhakk*, 'to destroy'; *cakk*, *cukk*, *cikk*, 'to trouble'; *phakk*, 'to go down'; *kuṭṭ*, cf. *kuṭṭima-*, *koṭṭapāla-*, *malla*, 'to support'; *bhall*, 'to injure,' cf. *bhallūka-*, 'a bear'; *vell*, 'to move.' Cf. also *akkā*, *allā*, being the names for 'mother' mentioned by commentators on Pāṇ., VII. 3, 107. Possible cases of spontaneous doubling, then, begin to appear the more numerous the more distant we are from the Vedas. I say only 'appear,' because it is possible that even these doublings may have been originally due to assimilation.

[1] III. 5, 2, 16. [2] II. 36, 7; XIX. 38, 2.

In classical literature, especially in lexicographical works and in the medical work Suśruta, names of several herbs occur, and these possibly indicate original doublings, as they cannot be explained on the grounds of assimilation. A few examples of these words may be found in the St. Petersburg Dictionary: *ijjala-*, *ikkaṭa-*, *kakkola-*, *cuccū-*, *pakkaṭī*. Similarly, several words relating to forest and village life may be mentioned: cf. *pakkaṇa-*, 'hut of a savage'; *palli-*, 'village'; *poṭṭali-*, 'a buddle'; *Pukkasa-*, *Bukkasa-*, names of particular low castes; *kikkiśa-*, an injurious insect; *kujjiśa-*, name of a fish mentioned in the Rājataraṅgiṇī. These words indicating original doublings were possibly dialectic borrowings, and then passed into classical Sanskrit. But it would be rash to maintain definitely that there are cases of original doubling, and not of assimilation.

Many proper names of persons and places occurring in inscriptions, the Mahābhārata, the Kathāsaritsāgara, and particularly the Rājataraṅgiṇī, possibly offer interesting and copious data of original doublings, as they cannot be explained on grounds of assimilation: cf. *Rissaka-*, *Jajja-*, names of two persons mentioned in a Sanskrit inscription, the Mahābana Praśasti.[1] The following collections from the St. Petersburg Dictionary may be of interest: *Illaka-*, a proper name occurring in the Kathāsaritsāgara. *Āraṭṭa*, *Kaukuṭṭaka-*, and *Jillika*—names of countries mentioned in the Mahābhārata. Several proper names of persons and places mentioned in the Rājataraṅgiṇī: cf. *Chuḍḍa-*, *Jaggika-*, *Jajja-*, *Jajjala-*, *Ṭakka-*, *Ṭikka-*, *Ḍhakka-*, *Thakkana-*, *Diddā*, *Dhammaṭa-*, *Dhammikā-*, *Nājjaka-*, *Maḍḍa-*, *Mummuni-*, *Lukkaka-*, *Sujjaka-*, *Sulakka-*, *Sussala-*, and *Himmaka-*.

Cases of original doubling in Prākrit have been noted by the Indian grammarians Hemacandra and Vararuci (*vide* Pischel, pp. 141 ff.). I have collected the following from Prākṛta Piṅgala: *uppari*, corresponding to Sanskrit *upari*, *uppāu-*=Skr. *upāya-*; *ghitta-*=*ghṛta-*; *jamakkā*=*yamakau*; *ṇāakka-*=*nāyaka-*; *phuṭṭe*=*sphuṭati*; *jitta-*=*jita-*. The quantity of the vowel in the corresponding Hindi words *ūpar* and *jīt* proves that the parallel Prākrit forms for these two words contained really double consonants. In a work in ancient Kashmiri dialect, the Mahānaya Prakāśa[2] of Śitikaṇṭha, there occur several cases of original doubling—e.g., *ruccī* for *ruci-*, *gatta* for *gata-*, *kitta* for *kṛta-*, *akka* for

[1] *Vide* "Epigraphia Indica," Vol. I.

[2] Kindly suggested to me by Sir George Grierson.

eka-; though the doubling in the last example, as in Prākrit, may have been due to the reduction of the quantity of the initial vowel.

Isolated tendencies of original doubling, then, though rare, are not entirely absent from Indian dialects, and they appear to be the more frequent the more distant we are from the Vedas.

Final Consonants.

Indian grammarians do not prescribe doubling of final consonants. The only exception is the authority of the Atharv. Prāt. (III. 26), which explicitly lays down that the final consonants of words are doubled. We have no record of such doublings in Sanskrit except in liaison, while Prākrit, as is well known, has dropped the final consonants instead of doubling them. If the phenomenon ever occurred, it must have been confined only to certain isolated areas, which it is difficult in this age to locate.

All grammatical authorities,[1] however, are agreed that the final *n* or *ṅ* when preceded by a short vowel and followed by any vowel are doubled—e.g., *pratyaṅ-atra=pratyaṅṅatra, san-atra=sann-atra.* Even in this case the Pāriśikṣā and Vyāsa Śikṣā[2] state that the final nasals, although written double, should be pronounced only once. When a consonant follows, however, then, according to the Varṇaratnadīpikā Śikṣā,[3] these nasals, like all "final" (i.e., not strictly final in the sense that they should not be followed by any word) consonants may be doubled—e.g., *āpnuvann pūrvam*, as in *samyakk sravanti, tatt karoti.* But although this Śikṣā calls them "final consonants," they cannot be strictly called final, as they are followed by other consonants, and their doubling is really a case of liaison rather than doubling proper. Similarly, doubling of final *ṅ* or *n* before vowels is also really

[1] Atharv. Prāt., III. 27: *ṅaṇanā hrasvopadhāḥ svare.* Ṛg Prāt., VI. 4; Vāj. Prāt., IV. 106. Pāṇ., VIII. 3, 32.

[2] *hrasvātparo nāda iha dvirūpo varṇakrame taṃ sakṛd uccared jñaḥ*; *hrasvāt paro nādo (a)vasāne pañcamo varṇo dvirūpavargo bhavati tathāpi varṇakrame varṇakramoktikāle taṃ nādaṃ sakṛd ekavarām uccared brūyat.* Pāriśikṣā, chapter on Doubling, 170.

Similarly, Vyāsa Śikṣā: *hrasvadvirūpavan nādo yad etaṃ sakṛd uccaret, varṇakramoktikāle tu nānyasaṃyogam uccaret.* XX. 10.

[3] ŚS, p. 130: *saṃyogādiḥ svarād dvitaṃ prāpnotīti vidur budhāḥ, tat padāntapadādyor vā padamadhye 'pi sarvataḥ, samyakk sravanti saritah sandhau tu padayor yathā.*

a case of liaison. For the final *n* represents in many cases an original Indo-Germanic *nt*, which by assimilation from the succeeding vowel became *nd*, and was finally changed into *nn*: Skr. *san*=Indo-Germanic **sonts*. Similarly, final *ṅ* represents even in Sanskrit declension *ṅks*, *pratyaṅ* being really *pratyaṅks*. The so-called additional consonant was conserved or reappeared in liaison.

Doubling in Sandhi.

On doubling in Sandhi there occurs an interesting observation in the Cārāyaṇīya Śikṣā:[1] "Sounds undergoing Sandhi are doubled. When there is no Sandhi, they should be taken as only short. Sounds undergoing Sandhi should be pressed like oil, sounds without Sandhi should be treated like leaves. When a final consonant precedes another initial consonant, the former is always doubled." In the first place, the author's use of the term "short" for a non-double sound is interesting, as it indicates that the opposite sound—viz., the double one—was, in the author's view, only long in quantity, and that the author did not mean thereby two distinct individual sounds. But as regards the author's observation that sounds in Sandhi are doubled, as in *samyakksravanti*, *tattprāpnot*, the author's view is not consistent with the general theory of syllabication discussed above, if by 'sounds' he means the twenty-one consonants to be specified below. For the general tendency of the language and the rule of syllabication that all final consonants went with the preceding syllable could not allow the doubling of final *t* in Sandhi. According to the general theory of the language, the final *t* in this case was implosive, and was entirely lost in Prākrit, and so it was hardly likely that it was phonetically doubled. The doubling of final consonants before other consonants in Sandhi, which is only rarely met with in a few MSS., had therefore more of a conventional than phonetic basis, and consequently it is improbable that in actual colloquial Sanskrit final consonants were pressed like oil, as the author would have it: they behaved more like leaves, in the sense that in actual speech the final consonant was not

[1] *sandhiprāptās tu ye varṇās teṣāṃ dvirbhāva iṣyate, abhāve sandhinā caiva laghutvaṃ caiva nirdiśet. tailavat pīḍayed varṇān sandhiprāptāṃs tu sarvadā, sandhinā rahitāṃś caiva parṇavac ca samācaret. vyañjanāntaṃ padaṃ pūrvaṃ tadvarṇaṃ cāparaṃ bhavet, dvirbhāvaṃ taṃ vijānīyāt sandhikāle tu nityaśaḥ.* Fol. 2*b*, 3*a*.

so compactly connected with the succeeding initial consonant even when, in orthographic transcription, the connection of the consonants was represented by Sandhi. Thus in connected speech *yāvat hi* in orthographic Sanskrit became *yāvaddhi*, and I have no doubt that in formal recitations and academic Sanskrit it was pronounced *yāvaddhi*, but considering the fact that the corresponding Prākrit form is *jāva hi*, and that the most ancient grammarians' rules of syllabication require the final consonant to go with the preceding syllable, it seems likely that in actual colloquial speech it was more often pronounced *yāvat hi* than *yāvaddhi*, although orthographically written *yāvaddhi*.

Indian grammarians had also noticed the difference between merely orthographic Sandhi and phonetic Sandhi of finals. Thus, commenting on Taitt. Prāt., V. 1, the Vaidikābharaṇa[1] points out that "Finals are of two kinds: those given in the texts (i.e. orthographic) and those due to the incapacity of the speaker (to continue the speech). Textual finals occur in regular positions at the end as well as in the interior of chapters, and at the end of words and kramas. The other kind (i.e. phonetic) has no fixed place. Saṃhitā or connected speech is similarly of two kinds: textual and phonetic. In the latter case a unit of sound-group or Saṃhitā is that which is within the compass of a single breath." In this author's opinion, then, Sandhi or connected speech was actually determined by breath. The author here speaks of a living phenomenon in the language, though his observation was not adequate enough. For although the various phases of connected speech varied with the breath-force of the individual, the author, by assigning no fixed place to those phases, failed to notice or emphasize certain fixed tendencies in the Sanskrit speaker to treat all final consonants in a particular way—viz., to pronounce them as implosive.

Interesting directions have been given regarding the different treatment of orthographic and phonetic Sandhi, by Kaccāyana[2] in his Pāli Grammar and by the author of the Kātantra.[3] They give

[1] *iha dvividho virāmaḥ, samāmnāyasiddaḥ, aśaktyādihetukaś ca. tatra samāmnāyasiddho 'nuvākānteṣu tanmadhyanityāvasāneṣu padakramānteṣu ca bhavati. itaras tv aniyatadeśaḥ. tatra saṃhitāyām iti pūrvasyābhāvu ucyate, ekaprāṇabhāva ity aparasya ca.*

[2] I. 10: *pubbam adhoṭhitaṃ assaraṃ sareṇa viyojaye.*
I. 11: *naye paraṃ yutte.*

[3] Ed. Liebich, p. 16. I. 1, 21: *vyañjanam asvaraṃ paraṃ varṇaṃ nayet.*
I. 1, 22: *anatikramayan viśleṣayet.*

two rules side by side: firstly, according to that which relates to orthographic Sandhi, a final consonant is to be carried to the succeeding sound. Kaccayāna gives the example "*tatrābhiratim iccheya*," the final consonant *m* being carried to the succeeding sound *i*. This rule was presumably more orthographic than phonetic, for otherwise we know that the final *m* of Sanskrit was reduced to a mere Anusvāra in Prākrit, and that therefore the tendency of the colloquial Sanskrit speaker was not to carry this final *m* to the succeeding sound. Side by side with this injunction to carry the final consonant to the succeeding vowel, the same authors prescribe that the final consonant of a word should be separated from the initial vowel of the next word, as in *tatrāyam ādi*. I have no doubt that this rule would have been contradictory to the other, if its scope had not been different. The scope of this rule was phonetic, the final consonant being kept apart from the succeeding word in actual pronunciation. Similarly, Patañjali, while commenting on Pāṇini, I. 4, 109-110, indulges in a good deal of philosophical speculation on the nature of Saṃhitā and the finals, but subsequently bows to usage. It is difficult, he says, to define these terms. "Some people define Saṃhitā as the closest proximity of sounds, but this definition would be inapplicable when the same sounds are uttered slowly. Some authorities restrict Saṃhitā to that connection between one word and another, when there is no interval between the two, but, strictly speaking, with this definition the term would apply to any two consecutive individual sounds, for there is always an infinitesimal interval between them. Again, it is equally unsatisfactory to define a final, for in a sense every individual sound may be called final. The nature of Saṃhitā and the final should therefore be known only from usage. Thus when a man is reading, another may say to him, 'Read *śánno devīḥ* by Saṃhitā, i.e. closely connected.' And the reader then brings the sounds in extremely close proximity. And another person may ask him, 'What is the final sound of your reading?' And he may reply, 'The final is *a* or *i* or *u*.' Both of these terms, Saṃhitā and the final, are known to the world, and their nature is to be known from usage in the world."[1] In other words, Patañjali here admits that Sandhi and the final were subject to the usage of the living dialects, and were not bound to orthographical texts or grammatical rules. That even the gram-

[1] ***saṃhitāvasānayor loke viditatvāt siddham.***

marians had to bow to this usage is further corroborated by the well-known maxim of Sandhi that it was necessary only within a word, but was optional between one word and another.[1]

When, therefore, the Cārāyaṇīya Śikṣā states that final consonants in Sandhi are to be doubled, the author is right if he is referring to formal recitation of Vedic texts or pronunciation of academic Sanskrit, but his rule does not hold so good of final consonants as actually pronounced in living colloquial speech, as the above testimony of the grammarians, the tendency of the language, and the general theory of Sanskrit syllabication will amply testify.

In the above paragraphs I have criticized, in the light of the general tendency of the language, the observation of the Cārāyaṇīya Śikṣā regarding the doubling of finals. But considering the fact that several other observations of this Śikṣā so correctly represent the facts, and that the Atharva Veda Prātiśākhya (III. 26) goes even further by stating that *all* final consonants are doubled, we have reason to suppose that these authors refer to an actual phonetic phenomenon which may have been confined to certain isolated circles among the spheres of Sanskrit pronunciation. I have referred above to academic Sanskrit in which doublings of finals were commonly observed; but one can hardly suppose that academic Sanskrit was not a living phenomenon in any grade of Sanskrit-speaking communities. It would be unreasonable to suppose, for instance, that English as spoken by educated London is not a living phenomenon because it does not typically represent the dialects of England. It was therefore not unlikely that the finals of consonants in Sandhi, as in *tatt-karoti*, were actually pronounced double among certain educated circles in Sanskrit-speaking India. Moreover, although we do not find strictly final consonants doubled in Prākrit, certain dialects of Prākrit show distinct traces of doubling of presuffixal finals and of the finals of prefixes. For instance, corresponding to Sanskrit *cikitsā* we have *cikicchā* side by side with *cikissaa*; for Sanskrit *utsava-* we have *ucchava-* in Māgadhī and Śaurasenī side by side with *ussava-* in Ardhamāgadhī.

[1] *saṃhitaikapade nityā nityā dhatūpasargayoḥ*. Cf. Bhandarkar: Journal of the Bombay Branch of R.A.S., Vol. XVI.

This divergent treatment in Prākrit of the final *t* before *s* may be further illustrated by the following examples:

Prākrit.	Sanskrit.	Prākrit.	Sanskrit.
kucchia-	*kutsita-*	*ussagga-*	*utsarga-*
bīhaccha-	*bībhatsa-*	*usseha-*	*utsedha-*
macchara-	*matsara-*	*ussāsa-*	*ut-śvāsa-*
vacchala-	*vatsala-*	*tassaṃkin-*	*tat+śaṃkin-*

Examples like *cikicchā* indicate that certain dialects had a tendency, not only to maintain the final or semi-final *t* in Sandhi, but also to double it, for the *t* in these examples has not been dropped; it has been doubled and palatalized. In the other set of examples, however, as in *ussagga-*, the general tendency was followed by dropping out the *t*, though even here the *t* left its trace behind by the doubling of *s*.

Limits of Doubling.

As regards the limits of doubling, Pāṇini quotes the opinion of Śākaṭāyana,[1] who holds that doubling cannot occur in a group of three or more consonants—e.g., doubling cannot occur in *pakṣman-*, *vaktra-*, *kārtsnya-*. If the author meant thereby that the group in question was to be within the same syllable, Śākaṭāyana's view was sound, for it is hardly likely that the average Sanskrit speaker had the breath-force enough to pronounce, in addition to a group of three or four consonants, another consonant to effect the duplication, with a vowel to complete the syllable—e.g., it is hardly likely that in *kārt/tsnya* the average speaker could double the *n*, which the phonetic rules of Sanskrit required, as will be explained below. But if the author meant the group to be within a single word, irrespective of syllabic division, then his view was phonetically unsound. For there was no reason why doubling should not have occurred in *vaktra-* so that the syllabic division was *vakk/tra*, the doubled *k* belonging to the first syllable. At any rate, this ancient authority's rule was a reasonable warning against the monstrous conventionalities of unnatural doubling so often met with in Sanskrit MSS. and inscriptions. Thus the Gautamī Śikṣā[2] gives instances of groups of six and seven consonants in *dhakk̄kmvyau* and *yuṅṅkṣkṣva*, which the average human being could

[1] VIII. 4, 50; *triprabhṛtiṣu Śākaṭāyanasya.*
[2] ŚS, p. 450: *gautamenoktaṃ na saptākṣarāt paraḥ saṃyogo bhavati.* Cf. p. 51.

hardly pronounce, though it is a relief to note that even the author of the Gautamī Śikṣā puts a limit to the total number of consonants forming a single group, and states in this connection that there does not exist a consonant-group consisting of more than seven members. Moreover, that Śākaṭāyana's restriction referred to a living phonetic phenomenon in some of the dialects is corroborated by Prākrit *saṇha-* for Sanskrit *ślakṣna-*, *pamha-* = Sanskrit *pakṣman-*, *tiṇha-* = Skr. *tīkṣṇa-* (though *tikkha-* has also been met with). These examples show that at least *some* spheres of Sanskrit pronunciation were averse to doubling when the consonant-group consisted of three or more consonants.

Besides the above "three-consonant" restriction on doubling attributed to Śākaṭāyana, the Vāj. Prāt.[1] states that no doubling can occur before the vowels ṛ and ḷ, and before the Yamas. Thus there will be no doubling of the consonants in *vismṛta-*, *aniṣṭṛta-*, *ṛddhikḷpta-*, and *rukk̃ma-*. As regards the non-doubling of the consonant before ṛ and ḷ, I do not know what phonetic grounds led the author to prescribe the restriction: perhaps the consonantal element of these vowels brought about a condition similar to the three-consonant restriction above, and thus made the consonant-group too unwieldy for doubling. The manuscripts examined by me seem to confirm our author's view, for they do not double the consonant before these vowels, but the evidence of the living dialects in this matter is not definite. For although we have no parallel of doubling in the dialects for Sanskrit *vismmṛta-*, Lahndi has *visria*, dropping out the *m* altogether, while Pāli has *visarati* or *visumarati*. But as we have at the same time Pāli *vitthata-* for Skr. *vistṛta-*, it is not safe to accept without reservation the Vāj. Prāt.'s prohibition of doubling before ṛ and ḷ.

There were presumably phonetic grounds for the author's prohibition of doubling before the Yamas. The Yamas, according to the theory of Indian grammarians, were "twins," and thus represented partial doubling. Thus the commentary on the same work remarks that "in *rukk̃ma-*, *k* is first doubled according to the general rule of doubling, and then the second *k* undergoes the stage called Yama."[2] For Yama literally means 'twin,' and the very term

[1] IV. 111-113: *ṛvarṇe, ḷvarne, yame.*

[2] IV. 161: *rukkma ity atra svarāt saṃyogādir ity ādinā kakārasya dvirbhāve kṛte 'nena sūtreṇa dvitīyasya kakārasya yama ity ayaṃ kāryakramaḥ kriyate.*

implies a double aspect—e.g., in *rukk̃ma-*, *k*, the first aspect, is non-nasal, and the other aspect *k*, according to the Indian theory, was slightly nasalized. It is improbable, therefore, that the author, who knew this double aspect of the Yama, could so contradict himself as to say that no doubling occurred before a Yama. He seems to have prescribed, not against doubling, but against the *further* doubling of the plosive before the Yama. There were said to be, as Rosapelly[1] has shown, three stages in the articulation of the Yama: (1) implosion of *k*, (2) its partial release by the explosion of air through the mouth, (3) its slight nasalization by the passage of air through the nasal cavity. With these three moments of articulation the quantity of the consonant was long enough not to require further doubling. And this prohibition of further doubling is quite consistent with another rule which the author gives among the same set of rules—viz., that consonants already doubled or homogenous consonants are not doubled again.[2]

In the above paragraph I have explained how, in the light of the Indian theory of Yamas, doubling of the plosive before the Yamas was not likely to have occurred. The Indian theory maintained that the basis of the Yamas was a slight nasalization of the plosive before a nasal consonant. But, as already explained in the section on the syllabication of the Yamas, what really seems to have happened in *rukma-*, was not the nasalization of the plosive (because a plosive and nasalization are contradictory terms), but the insertion of an unvoiced *n̥* after the plosive *k*, so that *rukma-* seems rather to have been pronounced *rukn̥ma-*.

But even with this explanation of the nature of the Yamas the non-occurrence of doubling before the Yamas was phonetically probable, because *kn̥m* was already a group of three consonants, and it was therefore not likely that doubling occurred in this group. At any rate, whatever the nature of the Yamas may have been, whether they were nasalized plosives or independent nasal consonants, the non-occurrence of doubling before them, as observed by the Vāj. Prāt., was a probable phonetic phenomenon.

[1] MSLP, Vol. X., p. 317.

[2] IV. 110.

Enumeration of Consonants that can be Doubled.

According to the Lomaṣī Śikṣā,[1] there are twenty-one consonants that can be doubled—viz., the five breathed unaspirated plosives, the five voiced unaspirated plosives, the five nasal consonants, the three semi-vowels—viz., *y*, *l*, and *v*—and the three fricatives—viz., *ś*, *ṣ*, and *s*. And consequently, as the Gautamī Śikṣā[2] specifies them, there are twelve consonants that cannot be doubled—viz., the five breathed aspirated plosives, the five voiced aspirated plosives, *r* and *h*.

As regards the fricatives, the Varṇaratna-dīpikā Śikṣā[3] remarks that the fricative *s* is doubled in only two Sanskrit words—viz., in *śāssva* and *rāssva*, and in no other word. There is no doubt that as a general rule Sanskrit declension did not allow *s* to stand before another *s* within a word; it was either dropped or changed into the dental plosive *t* (cf. *asi*, *vatsyāmi*). And though grammatical rules allowed it to stand when it was final but preceded another *s*, as in *narassarvatra*, the actual usage has been generally to drop the *s* even in this position, and to change it into *ḥ*. Again, even in those MSS. in which doubling has been carried to fantastic extremes, I have not found any instance in which medial *s* has been doubled; for instance, MS. Yajurveda (India Office, 2391) consistently doubles the fricatives *ś* and *ṣ*, but does not double the *s*, although the rules of the Prātiśākhyas[4] require the fricatives to be doubled except before plosives and vowels. The following are examples from this MS.:

ś	ṣ	s
viśśvataḥ	*addhvareṣṣvīḍyaḥ*	*asya*
aśśvinaḥ	*amuṣṣya*	*somasya*
mātariśśvam	*manuṣṣyān*	*sūryyasya*

[1] *varṇā viṃśatir ekaś ca yeṣāṃ dvirbhāva iṣyate*
prathamāntyās tṛtīyāś ca yala· īḥ śaṣasaiḥ saha. ŚS, p. 457.

[2] *atha sarveṣāṃ vyañjanānāṃ dvirbhāvo bhavati*
dvādaśākṣaravarjaṃ te kha cha ṭha thaphā
ghajhaḍhadhabhā rahayoś ceti. ŚS, p. 450.

[3] ŚS, p. 131: *sakārasya dviruktir yā sā dvayor eva nānyataḥ, ā ca śāssvā ca rāssve yat sakāro 'tra dviruktitaḥ.*

[4] According to the general rule (cf. p. 117) that the first member of a consonant-group is doubled when preceded by a vowel.

Hundreds of examples could be quoted regarding the non-duplication of *s* before a semi-vowel. Among the Gupta inscriptions, I have remarked only a single inscription (No. 17) in which *s* has been doubled in *yassya*, occurring five times therein. Now the question arises, Was the orthographic doubling of *s* avoided on phonetic grounds, or only for convenience' sake? I hold that it was avoided only for orthographical convenience, and that in actual pronunciation *s* in the group vowel+*sya* was doubled in Sanskrit: cf. Sanskrit *asya*= Prākrit *assa*; Sanskrit *tasya*=*tassa*; *kasya*=*kassa*. But then, how is this view consistent with the aversion of Sanskrit to allowing *s* before another *s* as in *asi, vatsyāmi, vidvatsu*?[1] The reason why *s* in these examples could not stand before another *s* was due to the fact that the first *s* was presuffixal. It behaved something like a final, and was therefore implosive. This particular "s" could not stand before any consonant without losing its aspiration, or being changed into *ḥ*: cf. *vidvadbhiḥ, vidvatsu, candramaḥsu*. The case of the medial *s* in *asya* was different. Even in Sanskrit the *s* of *asya* could be pronounced double without conflicting with the tendency to keep the presuffixal *s* implosive; *s* in the group *vowel* +*s*+*semi-vowel* was therefore actually pronounced double in Sanskrit, and its doubling was avoided in orthographical transcription for convenience' sake, as the group *sy*, *sv* were very common in Sanskrit. When, therefore, the Varṇaratnadīpikā Śikṣā states that Sanskrit has only two words in which *s* is double—i.e., can stand before another *s*—it refers only to presuffixal *s*. Moreover, strictly speaking, this is not a case of doubling, but only two consonants of different syllables coming in conjunction with each other. And yet even their case was open to the question whether they were merely written double or actually pronounced double. Their exceptional orthographical treatment indicates that they were pronounced actually double in some dialects. As regards the fricative *h*, the vast majority of Indian grammarians are unanimous that it is not doubled.[2] There is no doubt that orthographical evidence supports this view, for *h* has not been found written double in manuscripts or inscriptions. But it is hardly likely that the phonetic quantity of *h*, especially

[1] In *asi* and *vidvatsu*, the treatment of *s* may be a relic of parallel Indg. sounds; cf. Wackernagel, p. 111.

[2] Atharv. Prāt., III. 31; Gautamī Śikṣā, ŚS, p. 450; Māṇḍūkī Śikṣā, ŚS, p. 473.

as it was a voiced sound, remained short in all Indian dialects in all positions. And a few exceptional cases were actually noticed by Indian grammarians. Thus Uvaṭa,[1] commenting upon Ṛg Prāt., VI. 2, states that *h*, like any fricative, can be optionally doubled when it is not preceded by any sound or word, and when it is a member of a consonant-group—e.g., Ṛgveda, I. 35, 1, begins with the expression *hváyāmy agním*, which could be optionally pronounced as *hhváyāmy agním*. With regard to *h* before *r*, we find divergent views. Thus while according to Hārīta[2] *h* was not doubled when it preceded *r*, as in *duduhre, ahrayaḥ*, it *was* doubled according to the Cārāyaṇīya Śikṣā,[3] which illustrates *ahhratam, hhriyate, hhrādinī, hhradam*. It was not unlikely that this divergence of views was based on actual dialectic variations. According to this Śikṣā and the Lomaśī[4] Śikṣā, *h* is also doubled when it occurs between *r* and *y*, as in *etarhhyagniḥ*. The Lomaśī Śikṣā says that *h* after *r* or after an Anusvāra or before *r* was doubled—e.g., *barhha-, siṃhha-, hhrādinī*. As regards *barhha-* and *siṃhha-*, the increased length of *h* in these cases may possibly have been due to the intensification of stress or tone on their respective syllables (cf. Lahndi *ma'rhhāj, rhhā*, 'rhythm'), but there seem to occur no literary records of such doubling in Sanskrit. The increased length of initial *h* was possibly the transcription of the high tone so much generalized at the present day by some of the northern dialects, though, in the absence of sufficient records, it is impossible to hazard a definite opinion on this point, especially because even mid-Indian records do not show any orthographical evidence of this tendency. Prākrit separates initial *hr* and medial *rh* by Svarabhakti—e.g., Skr. *hrasva-* = Prākrit *rahassa-*; Skr. *hrada-* = Prākrit *haraya-*, *garhā* = *garahā*, *barha-* = *bariha-*. According to the Lomaśī and the Cārāyaṇīya Śikṣās,[5] *h* between *r* and *y* was doubled, as in *etarhhyagniḥ*: even here from the tendency of the

[1] *voṣmā saṃyukto 'nupdhaḥ.*

[2] Taitt. Prāt., XIV. 9: *rephaparaś ca hakāraḥ.*

[3] *harau yatra niyujyete hakāraḥ kramate tadā,*
ahhrataṃ hhriyate hhrādinī hhradaṃ ca nidarśanam. Fol. 3.

[4] ŚS, p. 46, 2: *rephapūrvo hakāras tu rephāt param athāpivā,*
anusvārāt paro yatra hakāraḥ kramati triṣu.

[5] *rayāv ubhayato yatra hakāro madhyataḥ sthitaḥ, ubhayoḥ*
kramaṇaṃ vidyād etarhhy agnir nidarśanam. Fol. 3.

language we expect a Svarabhakti, and not a doubling of *h*; *etarhya* was likely to have been pronounced *etarihya*.

Another interesting condition under which doubling was said not to occur has been mentioned by Pāṇini.[1] He states that "in the opinion of all teachers doubling does not occur after a long vowel." This was a sound and important observation of the phonetic tendency of the language. For it is generally confirmed by literary Pāli and Prākrit, which have shortened the quantity of the vowel before the corresponding double consonant when in Sanskrit there had been a long vowel before a consonant-group; while, on the other hand, after a long vowel the double consonant has been reduced to single: cf. Pāli *khajja-*=Skr. *khādya-*, but Pāli *sāsapa-*=Skr. *sarṣapa-* (through *sassapa-*).

But if 'all teachers' implied that doubling never occurred after a long vowel in any dialect of the country, they were wrong; for (1) Sanskrit allowed intervocalic double consonants after long vowels, as in *āttam*; (2) in several Vedic manuscripts, inscriptions, and classical works, doublings of the first member of the consonant-group after long vowels are often met with; cf., for instance, the following examples from the above-mentioned manuscripts:

tebbhyaḥ	*tīrtthyāya*	*māttrayā*
tīrtthebbhyaḥ	*śākkvararaivate*	*indrāggnī*

Similarly in the Gupta inscriptions:

ārttham (Inscription No. 14), *ārttiḥ* (No. 14), *mārgga-* (No. 17), *kīrttiḥ* (No. 15), *sagottra-* (Nos. 16, 21).

(3) Literary Pāli[2] also occasionally maintained double consonants after long vowels: cf. *dābbī*, 'name of a plant'; *dātta-*, 'sickle'; *svākkhāta-*, 'well-known'; *ājjava-*, 'honesty.' (4) Some of the modern dialects, e.g. Panjabi and Lahndi, retain a long vowel before double consonants: cf. Panjabi and Lahndi *sūttar*, *mūttar*, *nettar*, *khettar*, *gottar*, for Sanskrit *sūtra-*, *mūtra-*, *netra-*, *kṣetra-*, and *gotra-* respectively.

Rules of Doubling.

According to Indian grammarians, only that consonant was doubled which was the member of a consonant-group. No Indian grammarian, except the Sarvasammata Śikṣā and the Taitt. Prāt. (see above, the

[1] VIII. 4, 52: *dīrghād ācāryāṇām.*

[2] Geiger, p. 43.

section on Intervocalic Consonants) in a few individual cases, has prescribed the doubling of intervocalic consonants. Whether Indian dialects show any traces of intervocalic doubling has been discussed in the section on Original Doubling.

I now proceed to examine the detailed rules of doubling as prescribed by our grammarians.

I. *Vowel+Consonant-Group.*—This was the most general rule.[1] After a vowel, the first member of a consonant-group was to be doubled. Thus *mukta-* became *mukkta-*, *sapta-=sappta-*, *adya=addya*, *cakra-=cakkra-*. Pāṇini,[2] however, as already pointed out above, states that such doubling was optional; one could say *sapta-* or *sappta-*, *cakra-* or *cakkra-*, and so on. As I have already discussed above, the general tendency of the language as reflected in the living dialects proves that this doubling was decidedly predominant in the actual pronunciation of Sanskrit.

Pāṇini's option was therefore valid if it was orthographically allowed for convenience' sake. But if he meant to imply that both the pronunciations were equally current, he was wrong, as the opposite tendency for non-doubling (except when the second member of the group was a fricative after *r*), reflected in only a few dialectic examples like *rāī* for *rātri-*, *puā* for *putra-*, *ruaṇa* for *ratna-*, *raaṇi-* for *aratni-*, was rare.

II. *Anusvāra+Consonant-Group.*—The Ṛg Prāt. and the Pāriśikṣā[3] state that after an Anusvāra the first member of a consonant-group was doubled. It is interesting to note that both these works mention two alternative conditions that ought to precede a consonant-group before its first member is eligible for doubling. The preceding sound may be either a vowel or an Anusvāra. The Anusvāra was therefore not a merely nasalized vowel in the opinion of these authors, and they consequently seem to imply that an Anusvāra intervening between

[1] Ṛg Prāt., VI. 1: *svarānusvāropahito dvir ucyate saṃyogādiḥ.* Taitt. Prāt., XIV. 1; Atharv. Prāt., III. 28; Vāj. Prāt., IV. 100. Vyāsa Śikṣā: *svarapūrvam iyād dvitaṃ vyañjanaṃ vyañjane pare.* XIX. 1. Varṇaratnadīpikā Śikṣā, ŚS, p. 130.

[2] VIII. 4, 47: *anaci ca.*

[3] Ṛg Prāt., VI. 1: *svarānusvāropahito dvir ucyate saṃyogādiḥ.* Pāriśikṣā, chapter on Doubling: *hrasvād anusvāra iyād dvivarṇam, yoge pare tasya ca mātrikaḥ syāt, yogādir apy atra tathā dvirucyate 'nusvārapūrvo 'py athą cāgamaḥ syāt.* 162.

a vowel and a consonant-group did not hinder the doubling of its first member. But the testimony of the living dialects does not confirm the observation of these grammarians. For in Prākrit, whenever an Anusvāra has appeared before the corresponding original Sanskrit group, we do not find any traces of doubling, but in the absence of Anusvāra the doubling is maintained: cf., for instance—

Sanskrit.	Prākrit.		
darśana-	*daṃsana-*	or	*dassana-*
pakṣī	*paṃkhī*	or	*pakkhī*
plakṣa-	*pilaṃkhu-*	or	*pilakkhu-*
tejasvin	*tejaṃsi*	or	*tejassi*

These examples indicate that Anusvāra did hinder the doubling. It may be objected on behalf of our Indian grammarians that doublings in words like *paṃkhı* may have been orthographically avoided, but that it does not necessarily prove that they were phonetically absent. It is more probable, however, that in pronouncing *paṃkkhī* or Sanskrit *vaṃddya-* the quantity of the original double consonant was very probably affected by the intervention of Anusvāra in the same syllable. The syllabic quantity of the vowel to which the Anusvāra belonged was long, and after a long syllable, as after a long vowel, the doubling of the first member of the consonant-group was very probably avoided, as the quantity of the double consonant succeeding a long syllable and followed by another consonant was likely to have been reduced: cf. Skr. *agni-* = dialectic *aggi-* or *āg* If, however, the dialects observed by these grammarians had an extraordinarily strong tendency for doubling, then the original long quantity of the consonant may have been considerably preserved in spite of the intervention of the Anusvāra. That the existence of such dialects was not improbable may be indicated by double consonants after Anusvāra sometimes occurring in Prākrit: cf. *Śakunttalā*. *mahaṃtte* in Dravidian MSS. of Prākrit works.[1] The phenomenon may be noticed even in a few Skr. inscriptions—e.g., *vedāṃtta-* ("Epi. Ind.," VI. 109), *gaṁggādi-* (Ibid., VI. 348), *teṣāṃ mmayā* (Ibid., V. 127, 130). Even in several modern Indian dialects (except many of the N.W. and Singhalese) Skr. short vowel + nasal + plosive is represented by long vowel nasalized + plosive, and so indicates that among certain dialects of the original language, consonants were

[1] Pischel, p. 192.

pronounced double after the Anusvāra: cf. Skr. *kaṇṭaku-*>Hindi Marāṭhī *kā̃ṭā*, but Singh. *kaṭu*, Sind. *kaṇḍo*, L. Panj. *kaṇḍā*.[1]

But a still more surprising rule comes from the Vyāsa[2] Śikṣā and the Pāriśikṣā.[3] According to these authorities, not only is the first member of a consonant-group doubled after the Anusvāra, the Anusvāra itself is also doubled after a short vowel before the consonant-group in question. It will be shown in Chapter IX. (on the Anusvāra) that in the opinion of the Taittirīya school of phonetics, to which these Śikṣās belong, the Anusvāra was a consonant, being equivalent to half *g*, consequently pronounced like *ṅ*, and it will be also pointed out that this view was based on facts (cf. pp. 151 ff.). If, therefore, the Anusvāra in the pronunciation noticed by these Śikṣas was a consonant, it became the first member of a consonant-group, and hence was subject to duplication according to the general tendency of the language. The lengthening of the quantity of the Anusvāra before another consonant or consonant-group was therefore not unlikely in some of the Indian dialects : cf. how nasality by progressive assimilation has attacked the succeeding plosive in Prākrit *paṇṇa* or Lahndi *pañ* for Sanskrit *pañcan-*, Panjabi *jammu* for *jambu-*, Hindi *ammā* for *ambā*.

It would be of interest to note in this connection the more probable observation of the Vāj. Prāt. (IV. 109), which explicitly states that the Anusvāra before a consonant-group is not doubled.

III. *r+Consonant.*—The Prātiśākhyas[4] give a general rule that a consonant after *r* is doubled. Pāṇini, as usual, optionally allows this doubling. I have amply illustrated in the above pages that the tendency of the living dialects and the Gupta inscriptions confirm the doubling of the consonant after *r*.

The grammarians[5] have noted an important exception in the case of *r*+fricative when followed by a vowel. Thus the fricative in *varsa-* will not be doubled, but in *varṣṣya-* it will be doubled. This

[1] Cf. Bloch, pp. 82, 83; Turner, *Bull. School of Or. Stud.*, 1924, pp. 312, 313; Geiger, "Litt. und Sprache d. Sing.," pp. 42, 43.

[2] *hrasvād dvitvam anusvāraḥ prāpnuyāt saṃyute pare*
tadanusvārapūrvaś ca saṃyogādir dvir ucyate. XIX. 5, 6.

[3] Cf. footnote 3 on p. 117.

[4] Ṛg Prāt., VI. 2; Taitt. Prāt., XIV. 4; Vāj. Prāt., IV. 101; Atharv. Prāt., III. 31. Pāṇ. VIII., 4, 46.

[5] Ṛg Prāt., VI. 2; Taitt. Prāt., XIV. 16; Atharv. Prāt., III. 32.

observation was based on an important phonetic fact in the language, for when a vowel followed this group in the original Sanskrit form, the corresponding Prākrit form, in most cases, has given the Svarabhakti—e.g., Sanskrit *varṣa-* has become *varisa-*, though *vassa-* also occurs in a minority of cases. But when in the original Sanskrit word the group *r*+fricative (except the voiced fricative *h*, which, according to Indian grammarians, was not doubled) was not followed by a vowel, Prākrit invariably preserved the doubling—e.g., *varissa-*=Skr. *varṣya-*, *karissa-*=Skr. *karṣya-*, *harissa-*=Skr. *harṣya-*.

IV. *l+Plosive.*—As regards the group *l*+plosive, the grammarians have given divergent views, though the majority of them prescribe the doubling of the plosive in this case. The Taitt. Prāt.[1] does not prescribe this doubling, except in the case of *l*+aspirated consonant, as in *pragalbbha-*; but quotes the authority of Pauṣkarasādi, who maintained the doubling of *l* or of the plosive optionally. The same work quotes the opinion of other teachers who prescribed the doubling only of the plosive. And I hold that the evidence of Prākrit and manuscripts confirms the theory that maintained the doubling of the plosive after *l*. Thus Sanskrit *l+p*= Prākrit *pp*; e.g., *jalpati=jappati*, *kalpanā=kappanā*. Prākrit does not give the doubling only in that case when a nasal *m* or Anusvāra has been substituted for *l*: cf. Prākrit *jampaï*=Skr. *jalpati*. The doubling of the plosive after *l* has been sometimes met with in Sanskrit manuscripts, although I have not come across it in the Gupta inscriptions. The following are a few examples from a MS. of the White Yajurveda (No. 2391, India Office):

abhikalppamānā	*vviṣvagulkkāḥ*
kalppantām	*kilbbiṣāt*
	ulbbam

V. *Plosive+Plosive.*—In accordance with the general rule of the Prātiśākhyas, a plosive after a vowel would be doubled before another plosive, and I have given several examples from manuscripts in the above pages that confirm this view. But, as I have also pointed out above, the doubling of a *final* plosive+plosive, among the majority of areas speaking colloquial Sanskrit, was more orthographical than

[1] XIV. 2, 3, 7: *lavakārapūrvaḥ sparśaś ca pauṣkarasādeḥ, sparśa evaikeṣām ācāryāṇāṃ lakārapūrve ca.*

Vāj. Prāt., IV. 102: *ūṣmāntābhyaś ca sparśaḥ.*

phonetic, as the living dialects and the general tendency of the language indicate doubling only when a medial plosive is followed by another plosive. On the other hand, the Taitt. Prāt.[1] mentions the opinion of some authorities according to whom a plosive before another plosive is not doubled in any position, and the commentary Vaidikābharaṇa explains it by stating that according to these authorities a plosive before another plosive is not heard. In the opinion of these grammarians, then, the doubling of a plosive before another plosive did not occur. As already discussed above, there is no copious evidence from the living dialects in favour of this non-doubling. But even this opinion indicates that these authorities had observed another living and probably a more predominant phonetic phenomenon—viz., the Abhinidhāna of a plosive before another plosive (cf. pp. 137 ff.).

It may be objected here that the rule regarding the doubling of a plosive before another plosive, though enjoined by grammarians and confirmed by inscriptions and manuscripts, is not corroborated by the living dialects, where, as in *natta-* (=*nakta-*) *satta*=(*sapta-*), it is not the first but the second plosive that seems to have been doubled. But a little reflection will show that the apparent doubling of the second plosive in Prākrit is in reality the effect of a twofold process: (1) doubling of the first plosive (*nakk*, *sapp*), (2) its assimilation to the second plosive due to Abhinidhāna. Otherwise it is hardly likely that *nakta* became *natta* through the process *nak-tta*, for Indo-Aryan shows no tendency for doubling the initial consonant of a syllable.

The doubling of Skr. inscriptions and MSS. was therefore the actual pioneer of Prākrit doubling, as Jacobi has rightly pointed out.[2]

VI. *Fricative+Consonant.*—The Vāj. Prāt.[3] prescribes the doubling of a consonant after a fricative—e.g., *haste* will become *hastte*, *sparśa-*=*spparśa-*, *yaḥ kāmayeta*=*yaḥ kkāmayeta*, *grīṣma-*=*grīṣmma-*. As regards fricative+nasal consonant, however, our authorities differ. According to the Taitt. Prāt.[4] an additional consonant was inserted in the group, but the consonant inserted was not a nasal consonant. The inserted consonant was the breathed unaspirated plosive of the class to which the nasal consonant belonged. Thus *grīṣma-* became *grīṣpma-*, *aśma*=*aśpma*, *kṛṣṇa-*=*kṛṣṭṇa-*. In other words, in the

[1] XIV. 27: *sparśaḥ sparśaparaḥ: parasparena saṃyogaḥ sparśāṇāṃ tu bhaved yadi, tatpūrvasya śrutir nāsti prāhus teṣām idaṃ matam.*

[2] K.Z., Vol. XXV., p. 609. [3] IV. 102.

[4] *aghoṣād ūṣmaṇah paraḥ sparśaparāt tasya sasthānaḥ.* XIV. 9.

opinion of this authority the first element of the doubled group was denasalized. According to Plākṣi,[1] only a breathed plosive after the fricative was doubled; thus there was doubling in *niṣkkevalya-*, but not in *brahman-*. In the opinion of Plākṣāyaṇa,[2] however, only nasal consonants in this group could be doubled, and not plosives. According to this authority, then, there was doubling in *akṣṇṇayā*, *brahmma*, but not in *niṣkevalya-*.

As regards the plosive after fricative, its doubling has often been met with in manuscripts. The following are a few examples from two MSS. of the White Yajurveda (British Museum, 5350, and India Office, 2391):

tastthuḥ	*ghanasppati-*	*yuñjānaḥ pprathamam*
traiṣṭṭubhena	*sttokānām*	*savituḥ pprasave*
tastthuṣaḥ	*sṛṣṭṭaḥ*	*viṣṇoḥ kkramosi*
	mānasasttriṣṭṭub-graiṣmmī	

Prākrit also manifests similar doubling of the plosive after the fricative, as the following examples will show:

PRĀKRIT.	SANSKRIT	PRĀKRIT.	SANSKRIT.
nikkha-	*niṣka-*	*hattha-*	*hasta-*
pukkhara-	*puṣkara-*	*atthi*	*asti*
agniṭṭhoma-	*agniṣṭoma-*	*puppha-*	*puṣpa-*
diṭṭhi-	*dṛṣṭi-*	*āpphoḍaṇa-*	*āsphoṭana-*

But the striking proof of this doubling tendency in the language is given by the following examples from the living dialects, in which the doubling of the plosive had been so predominant that the aspiration of the preceding fricative has been entirely driven out:

PRĀKRIT.	SANSKRIT.	PRĀKRIT.	SANSKRIT.
sukka-	*śuṣka-*	*miṭṭa-* or *miṭṭha-*	*miṣṭa-*
paroppara-	*paraspara-*	*bappa-* or *bappha-*	*bāṣpa-*
kaṭṭa- or *kaṭṭha-*	*kaṣṭa-*		

The above examples, then, do not confirm Plākṣāyana's view that plosives could not be doubled after the fricative.

[1] Taitt. Prāt., XIV. 10: *aghoṣe plākṣe.*
[2] Ibid., *uttamaparāt tu plākṣāyaṇasya.*

As regards the nasal consonants after fricatives, their doubling has often been met with in manuscripts. The following are a few examples from the same MSS:

asmmin	*tasmmai*	*asmmabbhyam*
brahmmā	*raśmmiṣu*	
amuṣmme	*brahmmaṇā*	

Traces of this doubling of the nasal consonant may be noticed in Jaina Māgadhī—e.g., *ninneha-* for *nisneha-*; *tammi*=Skr. *tasmin*; *eammi, eyammi*=Skr. *etasmin*. But divergent tendencies, in which the nasal consonant has not been doubled, are also met with in some dialects of Prākrit: cf. Ardhamāgadhī and Śaurasenī *assim*=*asmin*; *bhassa-*=*bhasman-*. These examples offer us some grounds to suppose that Plākṣi, who did not favour the doubling of voiced consonants after fricatives, was referring to a geographical area to which Ardhamāgadhī and Śaurasenī belonged.

But the most remarkable observation regarding the treatment of a consonant after a fricative is that which we find in the Taitt. Prāt. This work prescribes the insertion of a breathed unaspirated plosive in the group fricative+consonant, so that this insertion could occur even if the consonant was a nasal consonant. Thus *grīṣma-* was to be pronounced *grīṣpma-*, *aśman-*=*aśpman-*, *Kṛṣṇa-*=*Kṛṣṭṇa-*, *Viṣṇu-*=*Viṣṭṇu-*. In my opinion this observation of the Taitt. Prāt. throws a definite light on a moot point in the philology of Indian dialects. It has come to the notice of several scholars that *Viṭṭhala* and *Kiṭṭa* (or *Kriśṭa*) correspond to Sanskrit *Viṣṇu-* and *Kṛṣṇa-* respectively. Thus Fleet discovered an inscription dated A.D. 1224 which presents the name of the prince Viṣṇuvardhana in the forms Biṭṭideva and Biṭṭiga. Again, Sir George Grierson[2] has pointed out that "in Bengali every *ṣṇ* is pronounced *śṭ* at the present day. Everyone, even a pandit, pronounces *Viṣṇu* as *Biśṭu*, *Vaiṣṇava* as *Boiśṭŏm*, and *Kṛṣṇa* as *Kiśṭo*." In Marathi and Canarese, persons who bear the name 'Viṣṇu' are colloquially addressed as 'Viṭṭhala.' In Canarese, persons bearing the name 'Kṛṣna' are addressed as 'Kiṭṭa.'[3] But in spite of these data, modern scholars have been unable to demonstrate the phonetic

[1] JRAS for 1907.

[2] JRAS for 1908.

[3] Thus a Canarese friend of mine, Mr. Kṛṣṇa Iyenger, tells me his people always address him (and all people bearing the name '*Kṛṣṇa*') as '*Kiṭṭa*.'

connection between *Viṣṇu-* and *Viṭṭha*. Thus M. Bloch[1] states in this connection that "there is no phonetic connection between *Veṭha-*, *Viṭṭha-*, and *Viṣṇu-*. The normal representative of Viṣṇu in Maraṭhi is Vinū." This phonetic connection, however, can be explained in the light of the general tendency pointed out by the Taitt. Prāt. in the above prescription, and confirmed by certain Aśokan inscriptions and several additional examples from Prākrit. For if in certain dialects *Viṣṇu-* was pronounced *Viṣṭṇu-*, and *Kṛṣṇa-* as *Kṛṣṭṇa-*, the next stages, *Viṭṭha-* and *Kiṭṭha-*, are easily explicable as being due to assimilation and dissimilation. That the tendency in question was general in some of the leading dialects in India is confirmed not only by examples from the treatment of the Sanskrit group *ṣṇ*, but also by the treatment of the Sanskrit groups *sm* and *ṣm*, which have become *ph*, i.e. *pph* in the Magadhean dialects of Aśokan inscriptions. Thus in the Dhauli and Jaugaḍa recensions of Aśokan edicts the consonant-group *sm* or *ṣm* in the personal pronouns (plural) *asmad-* and *yuṣmad-* is represented by *ph*, i.e. *ppha*. The following forms of these pronouns occur in the above-mentioned inscriptions:[2]

asmad (Plural).		*yuṣmad* (Plural).	
Nom.	*maye*	Nom.	*tuphe*
Accus.	*aphe, apheni*	Acc.	*tuphe, tupheni*
Gen.	*aphāka, aphākā, ne*	Ins.	*tuphehi*
Loc.	*aphesu, aphesū*	Gen.	*tuphāka*
		Loc.	*tuphesu*

Some of these forms have also been met with in the Aśokan inscriptions at Rūpanātha and Sāranātha, where may be noticed *tupaka*, *tupākam*, and *tuphe*. Now, is there no phonetic connection between *asmad-* and *aphe*, *Viṣṇu* and *Viṭṭha*? It is here that Taitt. Prāt.'s suggestive observation comes to the philologist's help: *asmad-*, according to our Prāt., became *aspmad-* (although not orthographically so written), which further changed into *appha-*, and the consonant *ph* in these pronominal forms was really a double consonant, though written only single, as has been often met with in Aśokan inscriptions. That even the personal pronouns underwent this phonetic change shows the frequency and the wideness of the general tendency in question occurring in the imperial dialects of Magadha.

[1] "La formation de la langue marathe" (Index).
[2] Hultzsch, "The Inscriptions of Aśoka." 1925.

Traces of this tendency have also been met with here and there in Prākrit. Thus, as Pischel has pointed out (p. 185), some Prākrit dialects have *bappa-* for *bhasman-*, *bhippa-* for *bhīṣman-*, *sepha-* for *śleṣman-*. The Abhidhāna Rājendra[1] quotes a passage from the Jñātādharmakathā Sūtra which represents King *Bhīṣmaka* as *Bhipphaya*. Singhalese has also inherited a few products of this tendency, as may be illustrated by the pronominal forms *topa*, *api* ('we'). Prākrit, however, betrays only a few relics of the tendency, which was probably present in a more general form much earlier. There are grounds, therefore, for the supposition that the chronological and geographical data to which this prescription of the Taitt. Prāt. refers may be traced back to the period of Aśoka, if not earlier, and to the dialects particularly connected with the languages spoken in the central area of the Magadha Empire.

1 "*koṃḍiṇṇagare tatthaṇaṃ turumiṇiṃ bhipphayasuyaṃkarayala.*"

CHAPTER VI

The Pronunciation of *y* and *v* in Different Positions

Several Śikṣās and the Pratijñā Sūtra give interesting directions regarding the pronunciation of the orthographic *y* and *v* in different positions.

Thus, according to the Yājñavalkya Śikṣā, *y* was to be pronounced as *j* in the beginning of a hemistich, in the beginning of a word, in a consonant-group, or after an *avagraha*; otherwise it was to be pronounced as *y*. But *y* remained a semi-vowel in the initial syllable of a word when it was preceded by a prefix, as in the word *vidyut*.

V in *vaḥ* and *vām* (both enclitic pronouns), and in the particles *vā* and *vai*, and in similar words signifying "option," was to be pronounced with only a slight obstruction of the mouth passage.

Y was to be optionally pronounced as a semi-vowel (under the above conditions), and after the word "*na*."

V was said to be of three kinds—"heavy" (the gloss explains it as "pronounced with great obstruction"), "light," and "very light." In the beginning of a word *v* was heavy; in the interior, slightly light; and at the end, very light. Similarly *y*. *Y* or *v* when arising from Sandhi or preceded by a prefix was said to be light; but it was optionally a semi-vowel after the words *atha*, *mā*, *sā*, and *na*.

Y and *v* when preceded by a nasal consonant in the same word were said to be heavy, although when products of Sandhi they were light. *Y* when combined with *h* or *r*, or followed by *ṛ*, was heavy, but not if it was combined with any other sound.[1] According to the Laghu

[1] Yājñavalkya Śikṣā, verses 150 ff.:

pādādau ca padādau ca saṃyogāvagrahesu ca
jaḥ śabda iti vijñeyo yo 'nyaḥ sa ya iti smṛtaḥ.
upasargaparo yas tu padādir api dṛśyate
īṣatspṛṣṭo yathā vidyut padacchedāt paraṃ bhavet.
tvadarthavācinau vo vāṃ vā vai yadi nipātajau
ādeśāś ca vikalpārthā īṣatspṛṣṭā iti smṛtāḥ.
vibhāṣayā yakāraḥ syāt tathā neti padāt paraḥ
bhavatīty api pūrvaiva tathā ca sapadād api.
yad eva lakṣaṇaṃ yasya vakārasyāpi tad bhavet, etc.

Cf. Pārāśarī Śikṣā, 60-63; Laghu Amoghānandinī Ś., 1-5; Padyātmikā Ś., 1-5; Nārada Ś., 16-18; Keśavī Ś., Sūtras 1-2; Pratijñā Sūtra, II. 1; Amoghānandinī Ś., 25-27.

Amoghānandinī Śikṣā, *y* in the former case (i.e., when combined with *r* or *h*), was pronounced as *j* in the texts of the Mādhyandina school; thus *bāhya-* was pronounced *bāhja-*, *sūrya-* was pronounced *sūrja-*. *Y* when followed by *ṛ* was said to be always pronounced *j*, e.g. *vyṛddhi-* was pronounced *vjṛddhi-*. After prefixes generally, however, the pronunciation of *y* as *j* was said not to occur, e.g., *y* in *upayajñāt* was not to be pronounced *j* (*upajajñāt*), though simple *yajñāt* was pronounced *jajñāt*. Even here there was an exception mentioned by the Keśavī Śikṣā (ŚS, p. 138), viz., after the prefix *sam*, *y* and *v* were to be pronounced as heavy. Thus *saṃvapāmi* was to be pronounced *saṃvvapāmi*, *saṃvarcase* as *saṃvvarcase*, *saṃyaumi* as *saṃyyaumi*, *saṃyajñapati-* as *saṃyyajñapati-*.

The Laghu Amoghānandinī Śikṣā points out in this connection that the pronunciation of the orthographic *y* as *y* was maintained in all schools but the Vājasaneyins. It states that although the orthographic reading of *y* was the same in both cases (when it was to be pronounced as *y*, and when it was to be pronounced as *j*), yet when a reading like *yajñāt* occurred, it was to be pronounced as *yyajñāt*—i.e., with a heavy sound in the beginning of the word.[1]

The Prātiśākhyapradīpa Śikṣā[2] states in this connection that *y* was not pronounced as *j* when it did not begin a word; thus *ayajanta* was not to be pronounced *ajajanta*. Nor did this pronunciation occur when *y* was combined with another consonant, as in *asminyajñe*. It occurred, however, even at the end of a word, when the *y* was doubled —e.g., *nṛpāyya-*, *dhāyyā*, *jarāyu-* were said to be respectively pronounced *nṛpājjam*, *dhājjā*, *jarājju-*.

The Keśavī Śikṣā (ŚS, p. 138) states that the initial and therefore heavy *y* and *v* should be pronounced double *y* and double *v*; thus *vāyáva stha* should be pronounced *vvāyáva stha*, *vásoḥ pavítram asi* as *vvásoḥ pavítram asi*, *yájamānasya* as *yyájamānasya*. In the next Sūtra the same Śikṣā implies that this doubled *y* was to be pronounced as *j*.[3]

The phenomenon that the *final* *y* and *v* were to be pronounced with only a slight effort was observed by authorities even earlier than

[1] *yat kṛtaṃ sūtrakāreṇa tadvat syāt saṃprasāraṇam, taj jñeyaṃ sarvaśākhāsu na tu vājasaneyinām. lakṣaṇasya virodhe 'pi pāṭhaikyaṃ yadi dṛśyate, tat tathā pratipattavyaṃ yyajñāyajñāva ity atha.* 13-14.

[2] ŚS, p. 297.

[3] ŚS, pp. 138 ff.

Pāṇini,[1] for he attributes this opinion to Śākaṭāyana, who is also cited by the Atharv. Prāt. in this connection.[2]

But the Śikṣās have gone further, for they point out that *y* and *v* even in the interior of a word were to be pronounced with only a slight effort. This phenomenon was noticed in Prākrit by Hemacandra, who in his Prākrit Grammar[3] points out that *y* (the result of the elision of a consonant) should be pronounced with a very slight effort (*laghuprayatnatarah*), provided that it is preceded and followed by *a* or *ā*, as in *nayaṇa-*, *dayālu-*. But if an *a* or *ā* does not follow, even this light *y* will be dropped, as *vāū-* for *vāyu-*. Moreover, this light *y* was to be pronounced only after an *a* or *ā*. Thus the *y* was not to be pronounced in *deara-*.

In the beginning of a word, however, both Hemacandra (Prākrit Grammar, I. 245) and Vararuci (II. 31) state that Sanskrit *y* became *j* in Prākrit, and they illustrate *jasa-*, *jaṭṭhi-*, *jakkha-* for *yaśas-*, *yaṣṭi-*, and *yakṣa-* respectively. But in the interior of a word, according to these authors, *y* did not become *j*, e.g. in *avayava-*. Hemacandra notices this *j* even after the prefixes *sam* and *ava*, as *saṃjoga-*, *avajasa-*, though perhaps he did not notice the wider use of *j* after *sam*, as the Keśavī Śikṣā did. He also notices that the *y* of the final verbal suffixes *anīya*, *īya*, and *tīya* was optionally pronounced *jj*, as *uttarijja-*=*uttarīya-*, *karaṇijja-*=*karaṇīya*.

The general accuracy of the above observations will be acknowledged, as the facts thus described have been borne out by the development of Sanskrit into the middle and modern Indian languages (cf. Pischel, pp. 176, 178). In addition to the evidence afforded by Pischel's investigations, the above remark of the Keśavī Śikṣā about the heavy pronunciation of *y* after *sam* is supported by spellings in the Pallava Grant Inscription[4]—e.g., *saṃjutto* side by side with *ppayutte* (=*prayukte*). It is also confirmed by the practice of literary Prākrit—e.g., *saṃjamanti* (=*saṃyacchanti*), *saṃjoapara*, etc.[5]

The Śikṣās and the Pratijñā Sūtra definitely lay down that this particular pronunciation of *y* and *v* was confined to the Mādhyandina school, the geographical position of which was North India west of

[1] VIII. 3, 18: *vyor laghuprayatnatarah śākaṭāyanasya.*

[2] II. 24.

[3] I. 180: *avarṇāt paro laghuprayatnatarayakāraśrutir bhavati.*

[4] "Epigraphia Indica," Vol. I., p. 3.

[5] Cf. Index of words in the Karpūramañjarī (Sten Konow's Edition).

Prayāga—the country known as Madhyadeśa.[1] It is a significant fact that the change of initial *y* into *j* has not occurred in Māgadhī, which was confined to eastern countries. In Māgadhī, according to grammarians,[2] not only does the initial Sanskrit *y* remain unchanged —e.g., *yadi* remains *yadi, yathā=yadhā*—but quite the opposite change has taken place—viz., Sanskrit initial *j* has become *y*; e.g., in Māgadhī *jānāti* has become *yānāti, jāta-=yāta-*, though even here *y* may have been a fricative (cf. Chatterji, p. 85). But when we come to that branch of Prākrit which is *par excellence* the dialect of Madhyadeśa, viz. Śaurasenī,[3] we find the pronunciation in question quite universal.

As regards the pronunciation of *v*, the Śikṣās prescribe similar rules—that in the initial position it should be pronounced as heavy, in the interior of a word as light, and at the end as very light.

According to the Pārāśarī Śikṣā, the *v* which is the product of Sandhi of *au* and *a* was also very light, as in the phrase *agnāvagni-*.[4]

And again, *v* or *y* between two short vowels, in the Mantras, was said to be not only very light, it was also short, as in the word *abhi-yúdhya-* the intervocalic sonant *y* was short.[5]

This view of the Pārāśarī Śikṣā, that *v* between vowels, or the *v* which was the product of Sandhi, was very light, was based on accurate observation of phonetic changes in Vedic Sanskrit, and of the actual pronunciation of the sounds in the dialects, as in the former the *v* which was the product of Sandhi was subject to elision, while in the later dialects it tended to disappear altogether between vowels.

In this connection the remark of Brugmann[6] that the Sanskrit *v* became labio-dental in the historical period requires modification. For at least a thousand years before Brugmann, Indian grammarians had observed, and correctly, that the Sanskrit *v* in the medial and final positions was not a labio-dental. In this connection Hemacandra[7] gives an interesting example, illustrating the change which the Sanskrit

1 ŚS, p. 138; Pratijñā Sūtra, 1-3. Weber, "Indische Studien," IV. 72.
2 A. C. Woolner, "Introduction to Prakrit," p. 10.
3 A. C. Woolner, Ibid., p. 5.

4 *aukārānte pade pūrve akāre parataḥ sthite,*
laghūtaraṃ vijānīyād agnāvagniś ceti nidarśanam. 63.

Also Amoghānandinī Śikṣā, 29.
5 *ādyantahrasvayor mantre vakāro yatra dṛśyate, sa tu hrasva iti prokto 'bhiyúdhyeti nidarśanam.* Ibid., 81.
6 Grundriss, 2nd Edition, Vol. I., p. 302.
7 I. 237.

medial *b* has undergone—viz., from a labial plosive to a labio-dental or a semi-vowel, which subsequently disappeared; e.g., Sanskrit *alābu-*=Prakrit *alāvu-*=later *alāū-*.

But in the initial position Sanskrit *v* has not only maintained its consonantal position, it has in several cases become a regular plosive consonant. It is in view of this that the Amoghānandinī Śikṣā takes pains to enumerate a list of words with the initial labial *b*, and another list with the initial labio-dental *v*. Thus it gives 102 words with an initial *b*, such as: *brahman-*, *bāhu-*, *bṛhad-*, *bodhaya*, *brūte*, *bandhu-*, *bahula-*, *bādhā*, *bibharṣi*. It definitely specifies that *b* in *iṣubalābala-* was always a labial plosive, and was not pronounced optionally as a labio-dental. It gives a list of forty-eight words with the initial *v* which it expressly specifies as being (labio-)dental, some of which may be mentioned: *viṣṇu-*, *vāyu-*, *vahni-*, *varuṇa-*, *vasu-*, *veda-*. It enumerates a number of words, such as *kuvala-*, *vala-*, *vivala-*, which can be optionally pronounced as labio-dental.[1]

Probably in view of a similar confusion of *v* and *b*, the whole of the Māṇḍavī Śikṣā[2] is exclusively devoted to the enumeration of 641 words in the Yajurveda containing the labial plosive *b*.

It is now well known that this change of initial *v* into *b* has occurred in several modern dialects. But the phenomenon has occurred even in the classical Sanskrit inscriptions of the Gupta period.[3] Thus—

(*a*) Inscriptions No. 55 and No. 56, and several others, double the initial *v* after the prefix *sam*; thus we have *saṃvvatsare 'ṣṭādaśame*. No. 62 has *saṃvvat*.

(*b*) The Khoh inscription has *barṣa-* instead of *varṣa-*, and *saṃbatsare* instead of *saṃvatsare*, but in the medial position we have *v* for *b* in several cases; thus in the Gupta inscriptions, Nos. 51, 79, and 80, we have *lavdha-* instead of *labdha-*. Inscription No. 22 reads *lamvoṣṭha-* instead of *lamboṣṭha-*.

Equally remarkable and accurate is the Yājñavalkya Śikṣā's observation that the *v* of the enclitic pronouns *vaḥ* and *vām* and of the particles *vai* and *vā* was light, i.e. semi-vocalic, for these enclitics, being unstressed, were not pronounced with so much obstruction and effort. It was probably owing to the obscure impression left on the

[1] ŚS, p. 94: *bibharṣi bibharṣy astve saṃhitāyam kramena tu, ete oṣṭhyāḥ samākhyātāḥ śeṣā dantyāḥ prakīrtitāḥ*

[2] ŚS, p. 72.

[3] Fleet's "Gupta Inscriptions."

hearer by their "light" pronunciation that the enclitic pronoun *vaḥ* and *vā* of Sanskrit were for the most part eliminated by Prākrit which generalized *tumha-* forms instead. Thus although in Pāli we find *vo* side by side with *tuhmākam* and *tuhme*, in Prākrit we generally find *tumhāṇaṃ*, etc., although in Māgadhī and Śaurasenī we occasionally find *vo* (Pischel, p. 298).

As regards the Yājñavalkya Śikṣa's observation that *y* when combined with *h* and *r* was consonantal, we do not find any distinct evidence of this in Pāli, which still preserves *bāhya-* for Sanskrit *bāhya-* and *gāhya-* for Sanskrit *grāhya-* (Childers)—the *y* remaining unchanged. But in Prākrit we do find that *y* in combination with *h* or *r* has become *j*. Thus, as Hemacandra[1] has pointed out, Sanskrit *grāhya-* has become *gejjha-*, Sanskrit *āryā* has become *ajjū* or *ajjā*.

CONCLUSION.

Indian grammarians, then, have accurately observed the phonetic change which Skr. semi-vowels have undergone in various positions. In this connection two questions will naturally arise: (1) How far does this change fit in with the general tendency of Indo-Aryan dialects? (2) How far can it be phonetically explained?

1. This change is a part of the general tendency of Indo-Aryan dialects to maintain plosion of consonants in the initial position, and to reduce their plosion in the medial and final positions. Thus Hemacandra noticed the well-known fact (Prākrit Grammar, I. 177) that in the medial and final positions Sanskrit plosives are generally dropped, e.g., Skr. *loka-*=Prākrit *loa-*; *naga*=*naa-*, etc. This tendency has been general, although some dialects in the north and the west have maintained the old pronunciation: e.g., Kashmīrī has still *yih*, *yogi*, *yod*, and *yotu* for Sanskrit *yad-*, *yogya-*, *yuddha-*, and *yatra*, and it still pronounces *vat* for *vartman-*, *wuh* for *viṃśati-*; while Marāṭhi, Rājasthāni, and Singhalese have also followed the general tendency by changing initial *y* into *j*: e.g., *jo* and *jau* for Sanskrit *yad-* and *yava-*. As regards *v*, it is the eastern dialects—viz., Hindi, Behari, Bengali, and Uriya—which have developed the initial *v* of Sanskrit into *b*; while the western dialects—viz., Sindhi, Lahndi, Gujarāti, and Marāṭhi—have kept up the *v*: cf. Sanskrit *vana-*, Sindhi *waṇu*=Hindi *ban*; Sanskrit *viṃśati*=Lahndi *vī̂*, Hindi *bīs*.

[1] I. 78.

2. Professor Meillet has pointed out in this connection[1] that the plosion of intervocalic consonants in various languages has been gradually reduced, except, as in Slavonic and Italian, where syllables are isolated from one another. What, then, is the phonetic explanation of this phenomenon? It may perhaps be attributed to the fact that it is easier to maintain the stronger breath-force for a plosive in the initial than in the succeeding positions. In the majority of cases it has been found easier to pronounce *ava* than *aba*, because in the latter case the transition from one vowel to another would be more abrupt. This is, in fact, a stronger case of the assimilation of intervocalic consonants to vowels, for intervocalic breathed consonants have also undergone a change in several languages: cf. Sanskrit *jagat*+*īśvara-*=*jagadīśvara-*. If the vowel's force of assimilation has vocalized breathed consonants, it has further changed voiced consonants into semi-vowels.

The tendency to maintain and intensify plosion in the initial position can be further illustrated from child language. Thus the Panjabi child says *chap* instead of *sap* (serpent), *cocī* instead of *roṭī* (bread).

Professor Passy[2] illustrates the French child's pronunciation of *tèpã* for *serpent*, and there is considerable force in his explanation that it is easier to maintain two organs against each other by closing the passage of air than by producing a friction. But this mode of articulating the initial consonant with a full plosion would not be easy for all classes of speakers. As has been shown above, even Indian dialects have shown considerable variation in the treatment of these sounds. The phenomenon described by the Śikṣās, then, is a part of the general phonetic tendency which has occurred in several, though not all, linguistic areas in the country.

[1] IF, Vol. XXXI.

[2] "Changements phonétiques," p. 144.

CHAPTER VII

Svarabhakti

The subject of Svarabhakti has been exhaustively treated by Schmidt in his "Geschichte des Indo-germanischen Vokalismus," and it is unnecessary to go over the same ground again. But a few interesting points may be noted here relating to the conditions and pronunciation of Sanskrit Svarabhakti which have been mentioned by Indian grammarians, and which do not seem to have come to the notice of that scholar.

I. Svarabhakti and the fricatives.

All the Indian works[1] on phonetics, with the single exception of the Ṛg Prāt., point out the close connection of Svarabhakti with a succeeding fricative, stating that Svarabhakti occurs after *r* or *l* when they are followed by a fricative—e.g., *darśa-* will be pronounced as *dariṣa-*, *arhā*=*arihā*, etc. The close connection of Svarabhakti with a succeeding fricative is confirmed both by Pāli and Prākrit.

In the case of Prākrit, the *r* of Sanskrit is generally assimilated to a succeeding non-fricative consonant in Prākrit—e.g., Skr. *garjati*= Prākrit *gajjati*; *gardabha-*=*gaddabha-*; *garbha-*=*gabbha-*; *ālarka-*= *ālakka-*. But when the *r* is followed by a fricative, Prākrit may have the Svarabhakti vowel *i* or *a*—e.g., Skr. *varṣa-*=Prākrit *variṣa-*; *karṣa-* =*kariśa-*; *arhat-*=*ariha-* or *arahā-*; *garhā*=*garihā*.

In the case of Pāli, there is no doubt that assimilation to the succeeding consonant is more marked, so that for Sanskrit *darśana-* we have Pāli *dassana-*; for Skr. *dīrghikā*, Pāli *digghikā*. Yet even Pāli has invariably the Svarabhakti vowel *a* or *i* before the fricative *h*—e.g., Skr. *barha-*=Pāli *bariha-*; *arhati*=*arahati*; *etarhi*=*etarahi*; *garhā*= *garahā*.

That the Svarabhakti vowel was closely connected with fricatives in Indian dialects may be further corroborated by the following examples

[1] Taitt. Prāt., XXI. 15.; Atharv. Prāt., I. 102; Vāj. Prāt., IV. 17.

from the edicts of Aśoka:[1] *garahā*, *garaha-*, *galahati*, *garahati*, *yathāraham*.

The general tendency to prefer the Svarabhakti before fricatives seems to be peculiar to Indian dialects, and it would be unsafe to venture a definite phonetic explanation of an obscure phenomenon occurring in these dead languages. Why did the Indian speaker say *varga-*, but *varaha-*? To explain this contrast, three points may be borne in mind:

1. Assimilation in Sanskrit was nearly always regressive. Thus the Sanskrit speaker always pronounced *vāk+dānam* as *vāgdānam*, *tat+ṭīkate=taṭṭīkate*. But the assimilating force of the succeeding consonant was much stronger when it was a plosive, so that in the group *r*+plosive, *r* was entirely lost in Prākrit, and thus no Svarabhakti occurred in this case. Even in the transitional stage before the duplication of the plosive in Prākrit, it appears that *r* lost part of its individuality and ceased to be a sonant.

2. But when *r* was preserved, it remained a sonant in Indo-European languages.

3. Fricatives involve less closure than plosives do, and so are nearer to vowels than plosives are. In fact, their relation to vowels is so close, that, as Professor Passy observes,[2] all fricatives can be changed into vowels, if only the passage of air be enlarged.

It will appear from the above facts that assimilation in Indian dialects being regressive, the succeeding fricative was a more favourable ground for rendering more distinct the vocalic effect of the preceding sonant *r*, and so a vowel was heard more clearly before *h* than before *g*. Still, I confess that the above explanation is not adequate, for this does not explain why in several other languages, as in French, in which regressive assimilation is predominant, the Svarabhakti before the fricative has not occurred.

The only safe assumption seems to be that the Indian preference of Svarabhakti before fricatives was an independent innovation.

II. No Svarabhakti when the fricative was followed by a consonant.

All Indian works on phonetics[3] maintain that the fricative before which Svarabhakti arises should not be followed by a consonant—i.e.,

[1] Woolner's Glossary, pp. 84, 125.

[2] "Changements phonétiques," p. 94.

[3] Vaj. Prāt., IV. 7; Atharva Prāt., I. 102.

must precede a vowel; thus there was said to be no Svarabhakti in *pārśvataḥ*, where the fricative *ś* is followed by a consonant.

This opinion of Indian grammarians is confirmed by Pāli and Prākrit, for Sanskrit *r*+fricative+consonant has often become in Pāli and Prākrit a doubled fricative, to which *r* was entirely assimilated: cf. Skr. *pārśva-* =Prākrit *pāssa-*; Skr. *varṣya-*=Prākrit *vassa-*, etc. Their observation, then indicates the transitional repression of Skr. *r* before it ceased to be a sonant (cf. p. 134).

The above two facts, then, as corroborated by the evidence of the living dialects, would solve Whitney's difficulty in understanding our grammarians' particular observation of Svarabhakti. For he says in this connection, "The reason for distinguishing the case of a following spirant—and that, too, only when followed by a vowel—as requiring a longer insertion, is not so clear, and I confess myself unable to discover the pertinence of the distinction; it is, however, a marked and important one to the Hindu phonetists" (Atharva Prāt., I. 101-2). By "longer insertion," Whitney refers to the Atharva Prāt.'s opinion that Svarabhakti before fricatives was longer in quantity than before other consonants. In other words, Indian grammarians had observed that Svarabhakti was more distinct before fricatives than before other consonants—a fact which had actually happened in the history of the language, as shown above.

III. As regards the pronunciation of Svarabhakti, some of the Śikṣās give us interesting data. According to the Keśavī Śikṣā[1] and the Pratijñā Sūtra,[2] the Svarabhakti vowel should be pronounced like *e*, thus *darśatám* was to be pronounced *dareśatám*; *párśavyena*= *páreśavyena* ; *śatávalśaḥ*=*śatávaleśaḥ* ; *hvārṣtt*=*hvāreṣtt*.

That the pronunciation of Svarabhakti as *e*, or as a vowel approaching the quality of *e*, actually occurred in some of the ancient Indian dialects is perhaps confirmed by parallel phenomena in other Indo-European languages, where *e* has emerged after a liquid before a consonant. We find this in Old Bulgarian[3]—e.g., *jeleni* (deer), *želězo* (iron).

According to the Lomaśī Śikṣā, however, Svarabhakti was to be pronounced[4] like *a*. Both the Yājñavalkya and the Māṇḍūkī Śikṣās,

[1] ŚS, pp. 141-142. [2] II. 3.
[3] Schmidt, "Geschichte des indo-germanischen Vokalismus," pp. 67 ff.
[4] ŚS, p. 460: . . . *svarabhaktes tathaiva ca, avarṇavat prayogaḥ*

however, prohibit what they call the defective pronunciation of Svarabhakti.[1] To pronounce it like *a* or *u* was said to be a defect, and was to be avoided. The correct pronunciation of Svarabhakti, according to these authorities, was like *i*, so that *śatávalśa-* was to be pronounced *śatávaliśa-*. It appears to me that this prohibition betrays a living phonetic fact, that all these pronunciations of Svarabhakti were actually current among the dialects of the time, and that the prohibition by the Śikṣās was an attempt to standardize its pronunciation by restricting it only to *i*. That *a* and *u* also intruded as Svarabhakti among several dialectic areas of the country is indicated by the examples already given. Thus in Pāli we have *arahā* side by side with *arihā*, while *dhūrṣádam*, even in the time of Brāhmaṇas, became *dhūruṣadam* (see p. 85). As, according to Pischel (p. 103), *a* often appears as a Svarabhakti vowel only in Ardhamāgadhī and Apabhraṃśa, it is not unlikely that the Lomaśī Śikṣā, which prescribes its pronunciation to be *a*, represents a geographical area to which Ardhamāgadhī and Apabhraṃśa belonged.

It is difficult to determine how far, where, and when *i* was the standard pronunciation of Svarabhakti. It appears without doubt from the orthographic evidence of Pāli and Prākrit parallels that *i* was more common; for while we have *a* only before *h*, *i* occurs both before *s* and *h*; e.g., *arahā-*, but *varisa-*, *arihā*. Compare in this connection Pischel (p. 104), who holds that *i* was the most common Svarabhakti vowel in Prākrit.

[1] Māṇḍūkī, verse 101.

CHAPTER VIII

ABHINIDHANA (INCOMPLETE ARTICULATION)

THE Prātiśākhyas and the Cārāyaṇīya Śikṣā describe the phenomenon of incomplete articulation, which has been generally called "Abhinidhāna," although two more names—viz., "Āsthāpita" ("stoppage")[1] and "Bhakṣya" or "Bhukta"[2]—are also used. This phenomenon has an important bearing on the Indian theory of the syllable and the history of consonants in the living dialects.

The phenomenon, as described in the Ṛg Prāt. (VI. 5), consists in the repressing or obscuring of a plosive or a semi-vowel (except *r*) before another plosive or a pause. The sound displaying this phenomenon is said to be pressed (*pīḍitaḥ*), quite weakened (*sannatarah*), and lacking in breath and voice (*hīnaśvāsanādaḥ*).[3] The term commonly used for this phenomenon is Abhinidhāna, which etymologically means "adjacent imposition." A parallel term has been used in Sandhi, the well-known "Abhinihita Sandhi,"[4] in which *a* is merged in the preceding *e* or *o*, as in *ágnetra* (=*ágne*+*atra*). Similarly, the consonant or semi-vowel while undergoing Abhinidhāna loses part of its articulation in the adjacent consonant or a pause.

This phenomenon took place under the following conditions:

1. *Plosive+Plosive.*—According to both the Ṛg and the Atharva Prātiśākhyas, and the Cārāyaṇīya Śikṣā,[5] a plosive followed by another plosive underwent Abhinidhāna; thus in *arvā́gdevā́ḥ*, *g* before *d* was said to be obscurely pronounced; similarly, *d* before *bh* in *marúdbhiḥ*. That in the actual pronunciation of the language there was a tendency to explode a plosive incompletely before another plosive, as the English do in words like "*act*," "*empty*," "*begged*," is corroborated by Pāli and Prākrit, in which, as is well known, a plosive followed by plosive is assimilated to the latter, as in *sapta*=Prākrit *satta*. It may, how-

1 Atharv. Prāt., I. 48.
2 Cārā. Śik., Chapter VIII., Fol. 8 (cf. p. 142).
3 Atharv. Prāt., I. 43.
4 Ṛg Prāt., II. 13.
5 *parasparaṃ sparśau bhuktau varjayitvā tu pañcamau.* MS. Gött., Fol. 8. Ṛg Prāt., VI. 5.

ever, be objected that this tendency might have been acquired by the living dialects at a later stage, and that Sanskrit proper does not distinctly manifest the Abhinidhāna of a plosive before another plosive. Nor were Indian authorities unanimous regarding this point. Thus, according to Vyāḍi (Ṛg Prāt., VI. 12), there was no Abhinidhāna of a plosive before another plosive; it only occurred when a consonant was doubled. According to the Śākalas, Abhinidhāna was optional when a plosive preceded another plosive of a different place of origin, as in *muk:taḥ, dag:dhaḥ*; t was necessary only in the case of double consonants. Moreover, according to the same authority, Abhinidhāna did not occur in the joint utterance of two consonants;[1] it only occurred when the plosive in question was pronounced apart from the succeeding consonant—i.e., when there was a little pause between the two consonants, the first consonant behaving like a final consonant. Thus there was said to be no Abhinidhāna when the phrase *yadyad* was pronounced as *yadyad*, where $d+y$ formed a consonant-group articulated without any intervening pause. But when the phrase was pronounced as *yad:yad*, then *d* was said to undergo Abhinidhāna before the infinitesimal pause or breach of continuity between *d* and *y*. The Atharv. Prāt. also seems to be of the same opinion, for after laying down rules regarding the conditions of Abhinidhāna, which begins with the contact of plosive and plosive, it states that consonant-groups in which Abhinidhāna does not occur have a joint articulation.[2] Thus, both according to the Śākalas (mentioned in the Ṛg Prāt.) and according to the Atharv. Prāt., Abhinidhāna belonged to separate or *asaṃyukta* articulation of consonants. Hence Whitney's remark on Atharv., I. 49, that "nothing is to be found in the other Prātiśākhyas corresponding to this rule," is subject to correction, for the parallel rule does occur in the Ṛg Prāt., VI. 7, where it is ascribed to the Śākalas. According to this opinion, then, there was no Abhinidhāna when an unbroken articulation, *marúdbhiḥ*, was made; but when a separated utterance, as *marúḍ:bhiḥ*, occurred, in which there was a pause between *d* and *bh*, then *d* did undergo Abhinidhāna.

We have thus three different views before us: (1) Every plosive before another plosive suffered Abhinidhāna. (2) No such phenomenon occurred, except in double consonants. (3) It occurred only in separated utterance. Now which of these three views was nearest

[1] Ṛg Prāt., VI. 7-8. [2] I. 49. Cf. Ṛg Prāt., VI. 7; cf. Max Müller *ad loc.*

the facts? As regards the first view, I have already indicated above that the evidence of Prākrit very strikingly supports it, as it is hardly probable that the tendency to Abhinidhāna only abruptly arose in the living dialects. The germs of this tendency must have been present in the pronunciation of Sanskrit when it was a spoken language. The presence of these germs of Abhinidhāna can be inferred from several declensional forms in Sanskrit. Thus in the declension of words like *marut*, *jagat*, we find that the plosive in Sanskrit declension is assimilated to the succeeding plosive, so that we get forms like *marudbhyām*, *kakupsu*. These examples indicate that the articulation of the plosive in question was lax; it comparatively lacked breath or voice, and so gave way to the succeeding sound. Forms like the above, then, are very probable cases of Abhinidhāna. But the clearest case of Abhinidhāna was, as Vyāḍi had observed, that of the first member of a double group of consonants, as in *datta-*, *aggni-*, where *tt* and *gg* exploded only once, the first *t* and *g* being unexploded. As regards those words, however, in which the plosive in question is in the medial position, and does not give any indications of assimilation, we cannot be certain whether the plosive underwent Abhinidhāna before another plosive. For instance, the plosives in words like *atka-*, *śrutkāra-*, *budbuda-*, do not give any indications of assimilation. In the case of such words Abhinidhāna must have varied with geographical conditions, some dialects exploding the plosive before another plosive, and others not. Compare, for example, the pronunciation of the words *vakt*, *rakt* in Hindustani and Panjabi. In the former, *k* nearly always undergoes Abhinidhāna before *t*; in the latter, it does not; the *k*, in most cases, exploding fully before *t*.

Besides variations due to geographical conditions, plosion of the plosive may have varied with different consonant-groups even in a dialect which generally exploded a plosive before another plosive. French, for instance, has a strong tendency to explode a plosive before another plosive, and yet even in French plosion of *p* before *t* often does not occur—e.g., in *obtenir* (*ŏptəni:r*), *petit Jean* (*pti žā*)[1]—while in the group *kt*, the explosion of *k* before *t* does not occur among many French speakers, e.g. in *acteur*.[2] There was considerable truth, therefore, in the observation of the Śākalas[3] that Abhinidhāna was necessary only

[1] Jespersen, "Lehrbuch der Phonetik," 1st Edition, p. 162.
[2] Passy, "Changements phonétiques," p. 101.
[3] Ṛg. Prāt., VI. 7-8.

in the case of double consonants, and that it was optional in the case of plosives with different places of origin. For in Sanskrit, whenever there is a plosive-group with the same place of origin, the second member of the group must be always either an aspirated consonant—e.g., *kakkhati, gagghati*, 'to laugh'; *ujjh-*, 'to abandon'—the group being practically an aspirated consonant doubled, or the same as the first consonant, as *datta-*, *puttra-*. In both these cases the plosive undoubtedly underwent Abhinidhāna. This was not necessary in those cases in which a nasal consonant followed a plosive, even if it belonged to the same place of origin as the plosive. Thus in *ratna-*, *t* and *n* were of the same place of origin: the explosion of *t* before *n* must have been subject to dialectic variations, though even here Abhinidhāna of the plosive was more probable. Many forms of the past passive participle of Sanskrit verbs ending in a dental betray a tendency of *d* to Abhinidhāna before *n*: e.g., *pad -panna-*, *klid -klinna-*, *ad -anna-*, *kṣud -kṣuṇṇa-*, *khid -khinna-*. On the other hand, the corresponding substitute in several Prākrit dialects for the Sanskrit group *t*+*n*=*tt*. This indicates that in the first instance *t* before *n*, instead of suffering Abhinidhāna, was so distinctly pronounced that it drove out even the *n*, but when once the second *t* also came in, the first *t* naturally underwent Abhinidhāna; cf. Sanskrit *patnī*=Prākrit *patti*; *sapatna-*=*savatta-*; *sapatnī*=*savatti-*; *prayatna-*=*paatta-*.

To sum up, then, in a group plosive+plosive there were three possible cases of Abhinidhāna: (1) Clear cases of Abhinidhāna occurred in double consonants. (2) Probable cases of Abhinidhāna, at least originally, were those in which the plosive was assimilated to the succeeding consonant. I say 'originally,' because it may have been more convenient to explode the consonant subsequently arising from assimilation. Thus in *vāgbhiḥ*, the original *k* of *vāk* very probably underwent Abhinidhāna, but the subsequent *g* arising therefrom may have been easier to explode. (3) Variable cases of Abhinidhāna were those in which the first plosive does not give any indications of assimilation.

2. *Abhinidhāna of Finals.*—As regards finals, both the Ṛg and the Atharva Prātiśākhyas (VI. 5, I. 45) state that final plosives suffer Abhinidhāna, while according to the former the final semi-vowels except *r* are also similarly affected. Even the Śākalas, who were generally opposed to the theory of Abhinidhāna, stated that if Abhini-

dhāna ever took place at all, it occurred only when there was an infinitesimal pause after the sound which was affected by this change; in other words, when the consonant or semi-vowel in question was semi-final. Thus when *valśa-* was pronounced as *val : śa-*, *l* was said to suffer Abhinidhāna, as there was a short pause after it, but there was said to be no Abhinidhāna when there was no such pause between *l* and *ś*. This observation is important in the history of Indian philology. For it is now an established fact[1] that the finals of Sanskrit were implosive, and this was also the opinion of Indian grammarians, as I have shown above. But as regards pronunciation in a consonant-group, the fact that Indian authorities were not unanimous on this point shows that the Abhinidhāna of a medial consonant when followed by another consonant was still passing through a transitional stage in the pronunciation of Sanskrit. The medial consonant also was influenced by Abhinidhāna, though not so much as in the case of finals. Thus, while Sanskrit final plosives have been lost in Prākrit, Sanskrit plosive+plosive or semi-vowel+plosive has been assimilated to the latter in Prākrit. This doubling when a succeeding plosive followed indicates that in the medial position the sound undergoing Abhinidhāna did not entirely lose its individuality, as it did in the final position, and that consequently in the transitional period of Sanskrit pronunciation, Abhinidhāna did not affect the medial consonant so powerfully as it had affected the final consonant. As regards the semi-vowels, I have demonstrated in the chapter on Semi-vowels (see p. 127) that in the final position they underwent *leśa* and so largely lost their articulation.

The commentary on the Vāj. Prāt., I. 90, gives the interesting injunction that the final plosive of a word should be articulated by a release or separation of the organs of production.[2] This injunction to complete the articulation of finals betrays the fact that the actual state of affairs was the contrary, and that the injunction was a warning against the presumable provincialism of the incomplete articulation of finals.

The Atharv. Prāt., II. 38, states an exception to the Abhinidhāna of finals, and calls it "Sphoṭana," (lit. break), consisting in the full release of breath in the articulation of a plosive at the end of a word. It states that when a final plosive is followed by a consonant the

[1] Gauthiot, "La fin de mot en indo-européen," p. 91.

[2] *sparśāntasya sthāna-karaṇa-vimokṣaḥ kartavyaḥ.*

tongue position of which is more backward, the said final plosive is fully exploded, and consequently suffers no Abhinidhāna. Thus the *ṭ* in *vaṣaṭkārèṇa*, *t* in *avatkám'* and *ejatkáḥ*, *b* in *triṣṭúb+gāyatrī*, *d* in *yád+gacchati*, *p* in *anuṣṭúp+tátaḥ*, are to be fully exploded, as they are followed by more backward consonants, *k*, *g*, and *t*. But *t* in *tat+paśyati*, *k* in *vāk+tasya*, *ṭ* in *ṣaṭ+tadā* will undergo Abhinidhāna, as they are followed by more forward consonants. The author is right if his theory is to be taken in a relative sense, for when a forward plosive is followed by a more backward consonant, the former, being nearer the opening of the mouth, has a better chance of exploding than in the reverse case. But the theory breaks down if it is to be strictly applied to the facts of Sandhi. Thus in *tat+ṭīkate*, *t*, being a more forward consonant, ought to have exploded fully before *ṭ*, but we know that it did not; for it was cerebralized, and so suffered Abhinidhāna in *taṭṭīkate*. Similarly, in the example *triṣṭúp+gāyatrī*, *p*, although a more forward consonant, was vocalized and changed into *b*, indicating a laxity of articulation. And when we take into account the great fact of the loss of the original Sanskrit finals in Prākrit, irrespective of the forward or backward nature of the consonant, we are forced to the conclusion that the tendency to implosion of all finals must have been originally present in the articulation of all Sanskrit plosives, though relative variations among individual consonants may have existed.

3. *Variation of Abhinidhāna among Individual Consonants.*—The Cārāyaṇīya Śikṣā handles the problem of the variation of Abhinidhāna among individual consonants, and points out in this connection that the breathed unaspirated plosives, the nasal consonants, and the semi-vowels *l* and *v* are incompletely articulated (*bhukta*); the rest are completely articulated.[1] But when another consonant follows, then, says the Śikṣā, the ten breathed plosives suffer Abhinidhāna.[2] "When two plosives come together, they repress each other;[3] not so, however,

[1] *vargāṇāṃ prathamā bhuktā bhuktāś caiva tu pañcamāḥ*
antasthānāṃ lavau bhuktau śeṣāś cānye 'bubhukṣitāḥ.

[2] *varge varge dvikaṃ cādyaṃ daśakaṃ varṇa-saṃcayam*
pareṣāṃ saha-yogena bhakṣya-vṛttiḥ praśasyate.

[3] *parasparaṃ sparśau bhuktau varjayitvā tu pañcamau*
ṅakāraṃ pañcamair yatra bhoktavyaṃ tat prayanataḥ.

MS. Göttingen, Chap. VIII., Fol. 8.

two nasal consonants, except that *ṅ* before *n* should be repressed with effort, as in *vāṅnopadhasyati*.[1] The eight consonants, viz. the semi-vowels and fricatives, do not repress one another, but when a plosive is followed by a semi-vowel, it belongs, like wine, to both the classes."[2]

The above details regarding the variation of Abhinidhāna among individual consonants are interesting. and show how minutely the Śikṣās had observed this phenomenon. These details must have varied with particular dialects and even with individual speakers, and so we in this age are not in a position to pronounce a definite judgment on their accuracy. At any rate, the vast variations of incomplete articulation among individual speakers and dialects observable at the present day indicate that there is nothing against the possibility of these particulars being actual in the particular sphere of speakers observed by the author of the Cārāyaṇīya Śikṣā. We may, however, consider the relative probability of these data.

The Śikṣa asserts that the breathed unaspirated plosives and nasal consonants when not followed by a consonant are incompletely articulated. If the Śikṣā refers to them only when in the final position, the case is quite clear and requires no further discussion. But as there is no such qualifying statement in the verse in question, the author is presumably speaking here of the consonants both when final and when followed by a vowel. Two questions now arise: (1) Of all consonants, why were only the breathed unaspirated plosives and nasal consonants marked out for Abhinidhāna in these two positions? Was the relative degree of Abhinidhāna greater in their case than in the case of other consonants? (2) Why did these two sets of consonants suffer Abhinidhāna even before vowels? The only safe reply to these questions is the one already made above—viz., that there is nothing against the possibility of these variations being actual in the particular sphere of speakers observed by the author—provided that the variation was only relative.

But when we take the case of the remaining sets of consonants—viz., the breathed aspirated and the voiced plosives—the comparatively lax utterance of these consonants probably could not strike the hearer so distinctly as in the case of breathed unaspirated plosives. For when *th*, *d*, and *dh* were incompletely articulated, something like

[1] *yakārādi-hakārāntam aṣṭakaṃ ca parasparam*
catuś caturo vāpi tv abhakṣyaṃ ṣoḍaśākṣaram.

[2] *sparśā antastha-saṃyuktā madireva dvijātibhuk.*

Ibid.

t, *ḍ*, and *d* respectively, the hearer probably heard consonants familiar to him, the extra aspiration and the voice having been reduced. But when *p*, *k*, and *t* were incompletely articulated, the resultant sound was presumably much less familiar to the hearer, and so it was specifically the breathed unaspirated plosives that were set apart as subject to Abhinidhāna. The incomplete utterance of these plosives even before vowels probably meant only a shade of laxity so common to Sanskrit consonants. But if the author is speaking here of intervocalic plosives, their being more or less subject to Abhinidhāna was beyond dispute.

As regards the nasal consonants, the reason why they were specifically set apart for Abhinidhāna is not far to seek. When in the final position, their change into Anusvāra even before vowels and before a pause in Prākrit proves how powerfully Abhinidhāna had affected them. Moreover, the fact that even in the initial position the original Sanskrit *n* is represented in Prākrit by a much laxer consonant, viz. the fricative *ṇ*, shows a laxity in the articulation of Sanskrit nasal consonants. The Śikṣā does not find any Abhinidhāna, however, in a group of nasal consonants, except in *ṅ*+*n*. The completeness in the articulation of a nasal consonant before another nasal consonant may have been actually observed by the author in the dialects of his time; but there are three reasons why his theory cannot be accepted if it is taken as a general tendency in the history of Indian philology. Firstly, in the case of double nasal consonants, Abhinidhāna of the first nasal consonant, as in *anna-*, *himmati*, could not be questioned. Secondly, when the tendency to lax utterance of sounds is present, it is particularly easy to pass immediately from one nasal consonant to another. Thirdly, the evidence of the living dialects does not confirm the Cārāyaṇīya Śikṣā's view of the complete articulation of a nasal consonant before another nasal consonant. Thus in Prākrit both *m* before *n* and *n* before *m* have been assimilated to the succeeding nasal consonant: cf. Sanskrit *nimnagā*=Prākrit *ninnagā* or *niṇṇaá*; Sanskrit *unmūla-* = Prākrit *ummūla-*.

The Śikṣā states that in a group plosive+semi-vowel, the plosive, "like wine, belongs to both the classes." The analogy is rather obscure, wine probably being referred to both as a beverage and an intoxicant. At any rate, the author's intention is plain: the plosive remains partly a plosive, but partly partakes of the succeeding semi-vowel. This modification of the plosive was correctly observed when

a dental was followed by the semi-vowel *y*: compare, for instance, Sanskrit *adya*=Prākrit *ajja*, the dental retaining its occlusion, but at the same time becoming a palatal affricate. But the theory does not seem to be corroborated in the case of other groups—for instance, in *k*+*y* or *t*+*v*: cf. Sanskrit *śakya*-=Prākrit *sakka*-; Sanskrit *sattva*-= Prākrit *satta*-.[1] It is possible, however, that there was a slight shade of modification in the plosive even in these groups, especially in *k*+*y*, during the transitional stage of this change, but whether the plosive was affected to such a degree as to belong to a different phoneme is not confirmed by the orthographical data of literary Prākrit and Pāli.

In this connection the observation of the Varṇaratnadīpikā Śikṣā is interesting. It states that the combination of plosive+semi-vowel was lax, and compares the combination to a wooden ball,[2] which can be broken easily. This observation was more valid in the case of Vedic Sanskrit,[3] where words containing plosive+semi-vowel had under certain conditions doublets containing plosive+vowel+semi-vowel; e.g., *dvā́* beside *duā́*. But when we also take into account the fact that in Vedic manuscripts *adya* was often transcribed *addya*, and in the parallel development of the language became *ajja*, the connection between *d* and *y* was not broken in the division *ad/dya*, though it may have been broken in the division *add/ya*; while in *ajja* the combination became much closer. These facts indicate that the combination was not so universally easy to break as was supposed by the Śikṣā. In the same connection there is to be found in the Yājñavalkya Śikṣā a curious classification of consonant-groups according to the laxity or closeness of their combination. This Śikṣā classifies consonant-groups into seven kinds, and figuratively calls each combination respectively (1) an iron ball, (2) a ball of clay, (3) a ball of flame, (4) a ball of wool, (5) a wooden ball, (6) a ball of air, (7) a ball of thunder.

(1-3) A consonant-group in which a Yama occurred was called an iron ball, e.g. in *ag͠gni*-, *patk͠knī*; that in which an Anusvāra occurred, a ball of clay, as in *saṃsthā*, *siṃhī*; and that in which a Nāsikya occurred, a ball of flame, as in *brah̃man*-, *vah̃nitama*-. It is extremely difficult

[1] There are some indications of such corroboration, however, for the groups *tv* and *kv*: cf. *catpāro* (Hultzsch, p. 23), Kash. *papu* 'ripe' < *pakvá*-.

[2] ŚS, p. 133:

sparśā apañcamā ye cāntasthābhiś ca saṃyutāḥ
dāru-piṇḍena te tulyāḥ ślatha-bandhāḥ prakīrtitāḥ.

[3] Arnold, "Vedic Metre," p. 89.

to determine now how far this figurative differentiation of Yama, Anusvara, and Nāsikya actually represented the facts. But the comparison, if true, seems to indicate that in actual pronunciation the combination between a consonant and a Yama was closer than it was between an Anusvāra and a consonant. The Anusvāra, as will be explained in Chapter IX., had sometimes a vocalic and sometimes a consonantal element, and consequently its combination with the succeeding consonant was likely to be facile, especially when it had a strong vocalic element. The Śikṣā seems to distinguish between a Yama and a Nāsikya, restricting the former to the group plosive+nasal consonant, and the latter to the group non-plosive+nasal consonant, as in the word *brahman-*. The combination of this additional nasal sound with the fricative has been compared to a ball of flame—a comparison which it is very difficult to explain. Perhaps nasality so intensely attacked the *h* in the actual pronunciation of the group that it called forth the analogy to a flame.

(4) A hissing fricative+nasal consonant, in which no Yamas were said to occur, was compared to a ball of wool, as in *aśman-*, *kṛṣṇa-*. As a nasal consonant was not said to nasalize the fricative in these examples, the two sounds remained distinct from each other, and were compared to a ball of wool, of which the threads remain comparatively apart from one another.

(5) The group consonant+semi-vowel was compared to a wooden ball, as already explained above.

(6) and (7) The fricative *Upadhmānīya*+labial was compared to a ball of air, as in *dyáu(ḥ):pitā, yuñjāná(ḥ):prathamám*; while the fricative *Jihvāmūlīya*+velar plosive was compared to a ball of thunder, as in *havi(ḥ):kṛ́t, diva(ḥ):kakút*. The analogy to "thunder" and "air" respectively seems to indicate that when followed by velars the explosion of the fricative had to meet greater resistance than when followed by labials. This difference was phonetically possible if the transition from the fricative to the velar plosive was more abrupt than from the fricative to the labial plosive. But the pronunciation of the Upadhmānīya and the Jihvāmūlīya not being exactly known at the present day, it would be unsafe to give any definite opinion on the matter.[1]

[1] ŚS, p. 29: *atha saptavidhāḥ saṃyogapiṇḍāḥ. ayaspiṇḍo dārupiṇḍa ūrṇāpiṇḍo jvālāpiṇḍo mṛtpiṇḍo vāyupiṇḍo vajrapiṇḍaś ceti. yamān vidyād ayaspiṇḍān sāntasthān dārupiṇḍavat, antasthaṃ yamavarjaṃ tu ūrṇāpiṇḍaṃ vinirdiśet. jvālāpiṇḍān sanāsikyān sānusvārāṃs tu mṛṇmayān, sopadhmān vāyupiṇḍāṃs tu jihvāmūle tu vajriṇaḥ.*

Again, the Cārāyaṇīya Śikṣā asserts that the ten breathed plosives, when followed by another consonant, suffer Abhinidhāna. If the author intended to restrict the Abhinidhāna only to the ten breathed plosives, then his observation was valid if he meant it in a relative sense, for modifications, as in *marudbhyām*, *vāgbhiḥ*, *arvāgdevāh*, etc., indicate that the Abhinidhāna of breathed plosives was a more common occurrence. But words like *anna-* from *ad*, *klinna-* from *klid*, indicate that the Abhinidhāna of voiced plosives was not uncommon in Sanskrit. This is also confirmed by the living dialects: cf. Sanskrit *udgama-*= Prākrit *uggama-*; Sanskrit *budbuda-*=Prākrit *bubbua-*; Sanskrit *udbhaṭa-*=Prākrit *ubbhaḍa-*; Sanskrit *pudgala-*=*pŏggala-*.

According to some authorities, as stated by the Ṛg Prāt.,[1] Abhinidhāna was necessary in the case of velar plosives, as in *samyak sravanti*. This seems to be a valid observation, if taken in a relative sense, for of all plosives, the velars, being the farthest from the cavity of the mouth, are among those plosives which run the greatest risk of suffering Abhinidhāna. And this is to some extent corroborated by the same Prātiśākhya in Chapter XIV., on incorrect pronunciation of Sanskrit. Among the various faults of pronunciation, a particular defect, viz. *grāsa*,[2] consisting in the repression of the back of the tongue, was mentioned, and the back vowels *a* and *ā* were stated as being subject to this incomplete articulation. What happened to the vowels may have similarly affected the velar plosives.

The Atharv. Prāt.[3] states that *l* before fricatives suffers Abhinidhāna, as in *val:śaḥ*. This probably refers to a sporadic phenomenon in some of the dialects, for in the majority of cases we should expect Svarabhakti after *l* or *r* before fricatives. The fact that this sporadic phenomenon actually existed in some dialects is corroborated by Prākrit *vassa-*, side by side with, in the majority of cases, *varisa-*, *valiśa-* (Veṇīsaṃhāra, III. 3, 4).

[1] *śākalaṃ prathame sparśe varge*. VI. 8.

[2] *jihvāmūlanigrahe grastam etat*. XIV. 3; *grāsaḥ kaṇṭhyayoḥ*. XIV. 4.

[3] I. 46: *lakārasyoṣmasu*.

CHAPTER IX

The Anusvāra

As regards the nature of the Anusvāra, three different views may be mentioned:

1. According to the first view, represented by the Atharvaveda Prāt. and the Siddhānta Kaumudi, the Anusvāra was a pure nasalized vowel. The former work describes the phenomenon as the elision of *n* or *m*, and the consequent nasalization of the preceding vowel. There is no doubt that the term Anusvāra does not occur in this Prātiśākhya, an omission which has led Whitney to the erroneous supposition[1] that the Atharvaveda Prāt. does not acknowledge the Anusvāra. Whitney, in my opinion, is not right, because this Prātiśākhya distinctly describes the same phenomenon which is specified by other grammarians with the name of Anusvāra. Thus while Pāṇini[2] specifically speaks of the Anusvāra as a sound into which "m" is changed before a consonant, and while his expounder Bhaṭṭoji Dīkṣita speaks of it as a pure nasal sound arising from the nose, the Atharvaveda Prāt. has described the same as the dropping of the *m* and the nasalization of the previous vowel. In both cases it is the *m* that has led to a particular change; in both cases no original nasal vowel has been acknowledged. It is a 'conditional' sound, appearing only under certain conditions, or, as the Cārāyaṇīya Śikṣā[3] would have it, Anusvāra is a dependent sound, which can manifest itself only on the basis of another sound. In the same way Kaccāyana,[4] in his Pāli Grammar, terms the Anusvāra as Niggahīta

[1] On Atharva Prāt., I. 26.

[2] *mo 'nusvāraḥ*, VIII. 3, 23.

[3] Chap. I., Fol. 1*a*:

anusvāro visargaś ca kalapāṭhaḥ plutā yamāḥ
jihvāmūlam upadhmā ca ṣoḍaśaite parāśrayāḥ
aśarīrās tu ye varṇā vijñeyās tu parāśrayāḥ
anyaṃ varṇaṃ samāśritya darśayanti nijaṃ vapuḥ.

[4] I. 18: *aṃ iti niggahītaṃ nāma.*

or arrested *m*. Whether the *m* is arrested, dropped, or changed, it is essentially the same phenomenon, termed as Anusvāra by Pāṇini, Niggahīta by Kaccāyana, and Anunāsika by the Atharvaveda Prātiśākhya. The real defect in the treatment of Anusvāra by this Prātiśākhya lies in the ambiguity of the term 'Anunāsika,'[1] by which it designates both the nasal consonants and the Anusvāra, just as the Ṛgveda Prāt. uses the general term Nāsikya[2] for Nāsikya proper (pure nasal vowels), Anusvāra, and Yama. Moreover, there is another passage in the Atharvaveda Prātiśākhya which indicates that even this work does not acknowledge an original or absolutely pure nasalized vowel, for it gives the antithesis pure vowel (non-nasal): nasalized vowel, stating, in connection with Krama Pāṭha, that a vowel which is pronounced nasal in the first instance should be pronounced *pure* when the word is repeated in the Krama Pāṭha;[3] thus the Krama version of *ā babhūvā̃*, will be *ābabhūvā̃ : babhūve 'ti babhūva.* Again, it was the nature of the Anusvāra which taxed the brains of ancient grammarians like Vyāḍi,[4] who, according to the Ṛg Prāt., was not decided as to whether the Anusvāra was a pure nasalized vowel or a nasal appendage to a vowel. It is the Anusvāra, then, of which the Atharv. Prāt. speaks as a nasalized vowel.

It is in later phonetic treatises, the Śikṣās, that a special term has been reserved for the pure nasalized vowel, viz. 'Raṅga,' though we find traces of it in the Ṛg Prāt.,[5] which speaks of the *rakta* or nasalized (lit. coloured) pronunciation. According to the Pāriśikṣāṭīkā (MS. Madras, No. 924), Raṅga proceeds from both the nostrils; it has a deep and sweet sound—sweet like the notes of bells, deep like a tiger's roar—and should be pronounced without any addition of the consonantal element *ṅ*, just as the milkmaid in Surāṣṭra, when selling curd, exclaims "*takrā̃*," the vowel therein being purely

[1] I. 11: *uttamā anunāsikāḥ*; I. 83: *anunāsiko 'ntaḥ pade hrasvaḥ*; I. 67: *nakāra-makārayor lope pūrvasyānunasikaḥ.*

[2] *nāsikyān nāsikyayamānusvārān.* I. 20.

[3] IV. 121: *anunāsikaḥ pūrvaś ca śuddhaḥ-yaḥ pūrvam-anunāsikō dṛṣṭaḥ sa parihārakāle śuddhaṃ kṛtvā parihartavyaḥ.*

[4] XIII. 15: *anantasthaṃ tv anusvāram āhur vyāiḍir nāsikyam anunāsikaṃ vā.*

[5] XIII. 5: *rakto vacano mukhanāsikābhyām.*

XIV. 20: *raktaṃ hrasvaṃ drāghayanty ugrā̃ okaḥ.*

I. 17: *raktasaṃjño 'nunāsikaḥ.*

nasalized.[1] That the entire vowel was nasalized in this case has been illustrated by another MS. work, viz. the Śikhyā Pāṭha.[2] Just as a pearl, overpowered with the light of sapphire, becomes blue, so the entire vowel, when nasalized, becomes a Raṅga.

This Raṅga, then, as in *mahā̃m̐ indraḥ, ślókā̃m̐ u*, was a distinctive designation for the pure nasalized vowel, the term Anusvāra being more general and indefinite, sometimes restricted only to what the Śikṣās termed as Raṅga, and sometimes covering both the aspects of a nasal sound.

2. According to another view, represented by the Ṛg Prāt., Anusvāra had either of the vocalic and consonantal elements, or, as the Ṛg Prāt. puts it, Anusvāra was either a vowel or a consonant.[3] Uvaṭa's explanation, that it was equivalent to saying that it was neither a vowel nor a consonant, is, in my opinion, not satisfactory. For this negative explanation not only fails to give any definite and positive idea of the Anusvāra, it misses an important phonetic phenomenon which must have been observed by the Prātiśākhya in the various dialects of its time. Of these, some had the consonantal, the others the vocalic element of the Anusvāra predominant. This is strikingly illustrated by the mistakes in Sanskrit pronunciation pointed out in that remarkable chapter,[4] viz. Chapter XIV., of the Ṛg Prāt. It points out, for instance, that some people erroneously nasalized a vowel before a nasal consonant, as in *na nūnam*; in some people the tendency to nasalize was so strong that they nasalized even the Visarga after a nasalized *ā* or after a nasalized *ṛ*, as in *svatavā̃m̐ḥ pāyuḥ* and *nṝm̐ḥ patibhyaḥ*. While these were pointed out

[1] *raṅge mukhe vyāghrarutopamaṃ syāt*
mātrādvayaṃ hṛjjanitaṃ tv anāsyam
. . . .
. . . *iha kāṃsyaghaṇṭānādaḥ*
nādaḥ sakampaḥ sa tu mūrdhajātaḥ.
nāsikyarandhradvaya-nisruto 'ntye
syād ekamātraḥ sa tu kākalī syāt. 153.

Saurāṣṭṛkā gopavadhūḥ sukaṇṭha-svareṇa takrā̃ iti bhāṣate yathā, tathā samuccārya vadet svakālād raṅgaś ca kampaḥ khalu vardhate saḥ. 55. Similarly Pāṇinīya Śikṣā, ŚS, p. 380.

[2] In the collection No. 21 of 1875–76, Bhandarkar Oriental Research Institute, Poona: *yathendranīlaprābhayābhibhūtaḥ muktāmaṇir yāti hi nīlabhāvam, tathaiva nāsikyaguṇena yuktaḥ svaropi raṅgatvam upaiti kṛtsnaḥ.* Fol. 23*b*.

[3] I. 11.

[4] XIV. 24.

as examples of exaggerated *rakta* pronunciation or vocalic nasalization, there were other people who exaggerated the consonantal element of the Anusvāra and added a strong consonantal *ṅ* to an Anusvāra, as *taṃ ghnanti* was pronounced *taṃṅ ghnanti*, or *taṅ ghnanti*. While these extreme cases of nasalization on the vocalic or consonantal side were condemned as provincialism, the Ṛg Prāt. evidently observed a living phonetic phenomenon, and finding that even the educated could hardly escape it, had to set up a standard, a *via media* between these two types of pronunciation.

According to the third view, represented by certain phonetic treatises of the Taittirīya school, the Vaidikābharaṇa, the Sarvasammata Śiksā, and the Yājuṣabhūṣaṇa, the Anusvāra was entirely a consonant, and was to be pronounced like half *g*. Thus, commenting on the Taitt. Prāt., II. 30, the Vaidikābharaṇa remarks, "The object of the statement that both the Anusvāra and the nasal consonants are Anunāsika is to reject the theory of another school which maintains the Anusvāra to be either a vowel or a consonant. For Anusvāra in our school is entirely a consonant like the nasal consonants proper, as its articulation is that of half *g*."[1] The Vaidikābharaṇa does not give here a valid interpretation of the statement of the Taitt. Prāt. For merely putting together both the Anusvāra and the nasal consonants in the same category—i.e., designating them as Anunāsika—could not necessarily imply that the Anusvāra was also a consonant. It only indicated a feature common to both, viz. nasality. Moreover, that the Taitt. Prāt. did not intend the Anusvāra to be entirely a consonant is implied by another set of rules—viz., those in which the Prātiśākhya puts the Anusvāra side by side with other vowels like *a*, and designates all of them, including the Anusvāra, as short,[2] while if Anusvāra had been intended to be entirely a consonant, its quantity (like the quantity of every consonant, according to Indian grammarians) being a half-mora, the Anusvāra would not have been allowed the same length as a short vowel, the quantity of which was

[1] Taitt. Prāt., II. 30: *anusvāro vyañjanaṃ vā svaro veti paramataṃ tannirāsārtham idam ucyate. anusvāro 'py uttamavad vyañjanam evāsmacchākhāyam, ardhagakārarūpatvāt.* Similarly, Sarvasammata Śikṣā, 43. Pāriśikṣā:

yajuṣy anusvāra ihāpi yatra
bhaved dhy ardhagakārayuktaḥ. 161.

[2] I. 32, 33, 34:

akāraś ca, tena ca samānakālasvaraḥ, anusvāraś ca.

held to be one mora. But, however untenable this interpretation of the original intention of the Taitt. Prat. may have been, its expositors, in maintaining the Anusvāra to be entirely a consonant, betray a tendency for consonantal Anusvāra in certain dialects of the time, a tendency for which several Sanskrit inscriptions offer considerable evidence. A few examples may be given:

I. Gupta inscriptions:

parivṛṅhaṇārtham (No. 2).
anśāni (Nos. 12, 28).
guptavanśaikavīraḥ (No. 13).
vanśalakṣmīm (No. 13).
tejāṅsi (Nos. 33, 34).
vinśatime (No. 30).
vaṅśe (No. 33).
aṣṭāviṅśati- (No. 38).
ansa- (Nos. 39, 49).
hansa- (No. 46).
nṛśaṅsāḥ (81).
vanśajasya (Nos. 15, 26, 28, 29, 31).
catvāriṅśad (No. 16).
siṅhābhyām (Nos. 16, 23).
kārūnś ca (No. 29).
aṅśumān (No. 17).
siṅgha- (Nos. 39, 40).
prānśuḥ (No. 32).
bhūyānsi (No. 35).
yaśānsi (No. 35).
abhraṅśī (No. 35).
nistriṅśa- (No. 81).

II. Badar Pillar Inscription of Pāla kings ("Epigraphia Indica," Vol. II.):

kalyāṇasaṅśī, vaṅśasya, pānsu-.

III. Duddhapani Rock Inscription of Udayayamana, eighth century A.D. ("Epigraphia Indica," Vol. II.):

tuṣārabhānsi, yaśānsi, kasmincit, siṅha-, aṅśuka-, nistriṅśa-.

The above examples indicate a strong tendency, in certain dialects of the time, to pronounce the Anusvāra as a consonant or very nearly like a consonant. Thus the Pratijñā Sūtra[1] lays down that the Anusvāra should be pronounced *nearly* like the nasal consonant corresponding to the plosive that follows it—e.g., in *taṃ jānan* the Anusvāra should be pronounced nearly like *ñ*. Again, the Siddhānta Śikṣā[2] (MS. Madras, No. 1012) states that the final *m* of *tvam* may be optionally

[1] Ed. Weber: 25:

parasavarṇa īṣat prakṛtyā cānyatra.

[2] *tvan mā hy arvāṅ tato viṣvaṅ tiryaṅṅ āvāṅ natau sadā*
śiṅte vṛṅte sma maṅtāṃ ca yuṅdhvaṃ vṛṅ dhṛṅ dhiṅās tathā . . . 53.

Com.: . . . *tvam ity asya vā ṅakāro 'ntādeśaś chāndasa ity anyo' rthaḥ.*

pronounced *ṅ* in the Vedas, and it enumerates a few more words in which the Anusvāra is said to be pronounced as *ṅ*—e.g., *śiṅte, vṛṅte, maṅtám, yuṅdhvam, vṛṅdhvam.* In this connection the etymological explanation of the term Anusvāra given by the MS. work Yājuṣabhūṣaṇa (Madras, No. 924), however fanciful, is interesting: Anusvāra is that which in the succeeding half of the syllable is pronounced like a vowel; from *anu*=succeeding, *svara*=vowel.[1] But according to the same author, as I have already indicated above, the Aṅusvāra is to be pronounced like half *g* in the Yajurveda.[2] There is an apparent inconsistency in these two views; but perhaps the author either meant that although the Anusvāra had essentially a vocalic element, it had acquired a consonantal element in the particular dialect or dialects of the Yajurveda School, or he meant, as it seems more probable, that the Anusvāra had both elements, the consonantal element being only half *g* and not a full *g*, as in the modern Bengali and Uriya pronunciation of the Anusvāra in Sanskrit loan-words. That there was a distinct consonantal element in the pronunciation of Sanskrit Anusvāra in certain geographical areas of northern India is corroborated by the evidence of some of the modern living dialects. Thus Hindi has lengthened the quantity and at the same time effected the pure nasalization of those vowels which have an Anusvāra in the corresponding Sanskrit words, while Panjabi has preserved and probably emphasized the consonantal element of the Anusvāra without lengthening the quantity of the vowel. Thus Sanskrit *vaṃśa-* has become Hindi *bā̃s*=Panjabi *vañjh*, in the same way as Skr. *danta-*=Hindi *dā̃t*=Panjabi *dand*; Skr. *bhaṃga-*=Hindi *bhā̃g*=Panjabi *bhaṅg*; Skr. *haṃsa-*=Hindi *hā̃s*=Panjabi *hans*; Skr. *raṇḍā*=Hindi *rā̃ḍ*=Panjabi *raṇḍī*; Skr. *khaṇḍa-*=Hindi *khā̃ḍ*=Panjabi *khaṇḍ*; Skr. *bandhaya*=Hindi *bā̃dh*=Panjabi *banh*; Skr. *kampaya*=Hindi *kā̃p*=Panjabi *kamb*. The quantity of the Hindi vowel in these examples indicates a compensatory lengthening to correspond to the original heavy syllable due to the consonantal element of the Anusvāra, which Hindi has lost. On the other hand, Sanskrit *daśa* ('ten') has remained Hindi *das*, Panjabi *das*, no change in the quantity of the vowel having taken place, as

[1] *anusvaryate paścārdhe svaravad uccāryata ity anusvāraḥ.* 15 (chapter on Technical Terms).

[2] *yajuṣy anusvāra ihāpi yatra*
bhavet tadādyardhagakārayuktaḥ. 161. (Cf. p. 151.)

there was no Anusvāra with presumably a consonantal element after the vowel.

From the above paragraphs it will appear that both the pronunciations of the Anusvāra existed side by side in classical and pre-classical Sanskrit: it will now be of interest to consider which of these pronunciations was more predominant in the historical development of the language. It seems that during the period of pre-classical and classical Sanskrit, the consonantal element of the Anusvāra was more predominant, and that in Pāli and Prākrit the Anusvāra verged more towards the vocalic side. For the striking difference between the Anusvāra as we find it in Sanskrit and in Prākrit consists in its more limited scope in Sanskrit. Anusvāra in Sanskrit (1) cannot stand before a vowel: we always find its corresponding nasal consonant *m* before a vowel; (2) cannot stand before a pause; (3) strictly speaking, cannot stand even before a plosive consonant, for although rules[1] of some grammarians optionally allow it at the end of a word before another word with an initial plosive, its proper place in the interior of a word is only before fricatives,[2] while some of the above examples from inscriptions show that even before fricatives nasal consonants were often pronounced.

All these facts indicate that the Anusvāra in classical Sanskrit had a predominant tendency to possess a consonantal element, or an element that was only an appendage to the preceding vowel or the succeeding sound. In Pāli and Prākrit, however, as is well known, the Anusvāra can and does most frequently stand before any of the above conditions, be it a vowel, a consonant, or a pause, although grammarians,[3] under the influence of academic Sanskrit, optionally allowed it before a vowel or a plosive. As the nasal consonant *m* ceased to appear, as a general rule, before a vowel, a plosive, or a pause in Prākrit, this indicates that in most of the living dialects the Anusvāra had a growing tendency to lose its consonantal element, although grammarians and certain literary works, under the influence of academic Sanskrit, continued to preserve the old distinction of Anusvāra and Anunāsika in a comparatively limited number of instances, as the Anunāsika in

[1] Pāṇ., VIII. 4, 59; Taitt. Prāt., II. 50.

[2] Atharv. Prāt., II. 33: "*ūṣmasv evāntaḥ pāde.*" Pāṇ., VIII. 4, 58.

[3] Kaccāyana, IV. 2, 5; Hemacandra, I. 24, I. 30.

jaṁuṇā, *cāṁuṇḍā*, *kā̃uo*.[1] In this connection it would be interesting to note a parallel phenomenon in the Italic dialects, in which the consonantal *n* of Latin has been superseded by the nasalized vowel in French: cf. Latin *centum*=French *sã*; Lat. *dens*=Fr. *dã*; *ventus*=Fr. *vã*.

[1] Hemacandra, I. 178. As regards the quantity of the Anusvāra, cf. pp. 188, 189.

CHAPTER X

The Nature of Accent

The accent, in the opinion of Indian grammarians, was predomiantly musical. This view of accent can be clearly seen in a striking passage which I have come across in the Pāriśikṣā.[1] According to this work, the seven notes of the musical scale proceed from the three accents, the high ('udātta'), the low ('anudātta'), and the Svarita. The first note ('ṣaḍja') and the second note ('ṛṣabha') are said to "arise from" the low accent, the third ('gāndhāra') and the fourth ('madhyama') from the high accent, and the fifth, the sixth, and the seventh ('pañcama,' 'dhaivata,' and 'niṣāda') from the Svarita. Of the last three notes, the seventh ('niṣāda') is said to "arise from" the independent, the Abhinihita, and the Kṣaipra varieties of the Svarita. Thus the independent Svarita as in *kanyā̄*, the Abhinihita as in *sō bravīt*, and the Kṣaipra as in *kṛdhī svâsmān* were said to "produce" the seventh note ('niṣāda') in the musical scale. The sixth note ('dhaivata') "proceeded from" the Tairovyañjana and the Pādavṛtta varieties of the Svarita—e.g., the Tairovyañjana Svarita as in *ū́rjāsvatī* and the Pādavṛtta as in *tā́ āsmāt* "produced" the sixth note. The fifth note ('pañcama') "proceeded from" the Praśliṣṭa and Pratihata varieties of the Svarita. Thus the Praśliṣṭa in *sū̄dgata-* and the Prātihata in *iṣé tvā̄* "produced" the fifth note in the musical scale.[2]

[1] *gāndhārako' madhyama uccajātaḥ*
ṣaḍjarṣabhau dvau nihatodbhavau staḥ
sapañcamo dhaivatak'o niṣādaḥ
trayaḥ svarāś ca svaritāt tu jātāḥ. 83.

Com.: *gāndhārākhyasvaraḥ madhyamaḥ tadākhyasvaraś ca uccajāta uddātasvarāj jāto bhavati*, etc. (Cf. p. 11, footnote 3.)

[2] *tatrāpi nityo nihitaś ca te 'tra*
kṣaipro niṣādasvarahetavaḥ syuḥ. 84.

Com.: *tatrāpi tasmin svaritaviṣaye' pi ye nityābhinihitakṣaiprāḥ.*
svaritās te 'tra prakaraṇe niṣādasvarahetavaḥ syur
niṣādasvarasya kāraṇānīty arthaḥ.
tathāntimasvārakapādavṛttau
syātāṃ tathā dhaivatahetubhūtau. 86.

Com.: *tairovyañjanaś ca pādavṛttākhyaś ca dhaivatasvarahetubhūtau syātām.*
praśliṣṭaprātihatābhidhānau
syātāṃ tathā pañcamakāraṇe tau. 85.

The first note was said to "proceed from" the low accent if it belonged to a long sound, while the second note "proceeded from" the low accent if the quantity of the sound was short.[1]

Similarly, the Nārada Śikṣā also states that the seven notes of the musical scale originate from the three accents of the spoken language. But this Śikṣā differs from the Pāriśikṣā as regards the particular musical notes originating from the accents in question. For according to this Śikṣā the seventh and the third (and not the fourth and the third, as the Pāriśikṣā asserts) proceeded from the high accent; the second and the sixth (and not the first and the second, as the Pāriśikṣā asserts) originated from the low accent; while the first and the fourth and the fifth notes proceeded from the Svarita accent.[2]

The commentators do not explain what these authorities actually meant when they said that the various musical notes "arise from" the three accents. Three interpretations of this phraseology are possible:

I. These authors actually believed in the linguistic origin of music. Compare similar opinions in modern times, according to which "plain-song has been characterized as 'the blossoming of the tonic accent.'"[3]

II. It was "only an instance of artificial systematization on the part of these authors," as Burnell maintains.[4]

III. It may have been mere symbolic representation, with which Indian scientific literature copiously abounds.

I. As regards the first interpretation, there are indications, in some Sanskrit works on music, of the tendency to attach greater importance to human song than to instrumental music, and to connect song with human speech. Thus the leading Sanskrit work on music, viz. the Saṃgītaratnākara,[5] states that "music is of three kinds, vocal, instrumental, and the dance But the dance follows instrumental

[1] *athānudāttau yadi dīrghahrasvau*
hetū ca ṣaḍjarṣabhayoḥ krameṇa. 88.

[2] ŚS, p. 424: *udātte niṣādagāndhārāv anudātta ṛṣabhadhaivatau, svaritaprabhavā hy ete ṣaḍjamadhyamapañcamāḥ.*

[3] Jules Combarieu, "Music: its Laws and Evolution," p. 167.

[4] Ṛktantravyākaraṇa, p. xlvii.

[5] I. 1:
gītaṃ vādyaṃ tathā nṛtyaṃ trayaṃ saṃgītam ucyate 21.
nṛtyaṃ vādyānugaṃ proktaṃ vādyaṃ gītānuvṛtti ca,
ato gītaṃ pradhānatvād atrādāv abhidhīyate. 24.

music, while instrumental music follows vocal music. Hence, owing to its predominance, we shall first describe vocal music." The author, in another passage,[1] ultimately traces vocal music to the tone, but states that "this tone, the product of energy and breath, is first manifested in the form of articulate sounds (of the alphabet), from which arise words, and words lead to sentences." According to this, then, language was the immediate, if not the ultimate, cause of vocal music, which, in its turn, dominated instrumental music and the dance. And according to our grammarian, the author of the Nārada Śikṣā, good music depends upon distinctness of pronunciation. Thus it speaks of ten kinds of good music, which it respectively designates as "the coloured, the complete, the elegant, the cheerful, the distinct, the loud, the gentle, the balanced, the delicate, and the sweet." Of these, the 'distinct' music was defined as that which consists in the proper expression of grammatical forms—viz. "words, the meanings of words, roots and suffixes, the augment, verbal and nominal derivatives, compounds, verbs, particles, prefixes, accent, gender, cases," etc.[2] These facts indicate that, according to the authors of the Saṃgītaratnākara and the Nārada Śikṣā, music and language were closely connected. A much earlier work than the Saṃgītaratnākara (circa thirteenth century), viz. Bharata's Nāṭya Śāstra (fifth century A.D.), does not attribute similar predominance to vocal music, but even this work speaks of a type of music which was said to be exceedingly liked by the gods, and which he designates as the "Gāndharva."[3] This Gāndharva had "three aspects—viz., pitch, rhythm, and language. This language consists of vowels, consonants, syllables, Sandhi, cases,

[1] *gītaṃ nādātmakaṃ vādyaṃ nādavyaktyā praśasyate*
tad dvayānugataṃ nṛttaṃ nādādhīnam atas trayam. I. 2, 1.
nādena vyajyate varṇaḥ padaṃ varṇāt padād vacaḥ
vacaso vyavahāro 'yaṃ nādādhīnam idaṃ jagat. I. 2, 2.
nakāraṃ prāṇanāmānaṃ dakāram analaṃ viduḥ
jātaḥ prāṇāgnisaṃyogāt tena nādo' bhidhīyate. I. 3, 6.

[2] ŚS, pp. 401-2: *gānasya tu daśavidhā guṇavṛttiḥ, tad yathā raktaṃ pūrṇam alaṃkṛtaṃ prasannaṃ vyaktaṃ vikruṣṭaṃ ślakṣaṇaṃ sukumāraṃ madhuram iti guṇāḥ . . . vyaktaṃ nāma padapadārtha-prakṛti-vikārāgamalopakṛt-taddhitasamāsa-dhātunipātopasarga- . . . vibhaktyartha-vacanānāṃ samyag upādāne vyaktam ity ucyate.*

[3] Chap. 28, 9-16: *atyartham iṣṭaṃ devānāṃ tathā prītikaraṃ punaḥ, gandharvāṇāṃ ca yasmād dhi tasmād gāndharvam ucyate*, etc.; *gāndharvaṃ trividhaṃ vidyāt svaratālapadātmakam*, etc.

the noun, the verb, the prefix, and the particles." The close connection of music and language is therefore apparent in these works, though the later works seem to be inclined to establish a *causal* connection between them. Their attitude on this point, however, was not definite. Thus the Nārada Śikṣā, which, as already mentioned above, attributes the musical notes to the three accents, states in another passage that the seven notes in the musical scale " arise " from the various organs of the body. " The first note arises from the throat, the second from the head, the third from the nose, the fourth from the chest, the fifth from the head, the chest and the throat, the sixth from the forehead, and the seventh from a co-operation of all the organs."[1] Moreover, both the Nārada Śikṣā and the Saṃgītaratnākara, which seem to find a causal connection between music and human speech, mention in other passages some animals which are said to produce notes in the musical scale. For instance, according to the Nārada Śikṣā, " the first note is uttered by the peacock, the second by the cow,[2] the third by goats and sheep, the fourth by the heron, the fifth by the cuckoo in the springtime, the sixth by the horse, and the seventh by the elephant."[3] It is possible, however, that these parallel analogies from the brute creation were given only to illustrate what, in the author's view, actually occurred only in the human voice, just as short and long quantities were measured in terms of the cries of certain birds (see p. 179). Or they may have discovered the infancy of the causal connection between

[1] ŚS, p. 411:

kaṇṭhād uttiṣṭhate ṣaḍjaḥ śirasas tv ṛṣabhaḥ smṛtaḥ
gāndhāras tv anunāsikya uraso madhyamaḥ svaraḥ
urasaḥ śirasaḥ kaṇṭhād ucchritaḥ pañcamaḥ svaraḥ
lalāṭād dhaivataṃ vidyān niṣādaṃ sarvasandhijam.

Cf. Bhāṣika Sūtra, III. 19-244.

[2] The gradation of pitch mentioned above in the different animals seems to be fairly accurate; but it is curious that the author puts tne cow's note higher than that of the peacock.

[3] ŚS, p. 407:

ṣaḍjaṃ vadati mayūro gāvo rambhanti carṣabham
ajāvike tu gāndhāraṃ krauñco vadati madhyamam
puṣpasādhāraṇe kāle kokilā vakti pañcamam
aśvas tu dhavivataṃ vakti niṣādaṃ vakti kuñjaraḥ.

Cf. Saṃgīta-Ratnākara, I. 3, 48:

mayūracātakachāga-krauñcakokila-dardurāḥ
gajaś ca sapta ṣaḍjādīn kramād uccārayanty amī.

music and inarticulate speech even in the primitive stages of the animal kingdom.

Our authorities, then, indicate some faint ideas of a general theory of a causal connection between music and language, but I have not come across any passage in which they have definitely worked out the theory.

II. According to another interpretation of this view, which was suggested by Burnell, it was only an instance of artificial systematization on the part of these authors. He maintains that these authors attempted "to identify absolutely the accents with certain definite musical notes. . . . The pitch of the accents is merely relative, and the attempt to fix them absolutely by certain definite notes is merely one more instance of the spirit of artificial systematizing that meets one everywhere in Indian literature." This reason, however, cannot be accepted because, firstly, the wording of the text does not imply the *identification* of the accent with musical notes. The text used by Burnell was of the Nārada Śikṣā,[1] and even in this we find "*svarita-prabhavāḥ*" ("*arising* from Svarita"). Now when B is said to arise from A, it does not imply that A=B. It rather suggests either a causal connection between A and B or a symbolic representation of A in terms of B. Now it has been shown above that the idea of a causal connection between accent and musical notes may have possibly occurred to our grammarians. If, however, it did not occur to them, I think it very probable that 'arise' indicated a symbolic representation of accent in terms of musical notation. And this representation is not "artificial systematization." It has been done in modern times, with a touch of living reality, by Professors Daniel Jones[2] and Klinghardt.[3]

III. We see, then, that Indian grammarians had observed a living musical phenomenon in Vedic accent, and they tried to describe the phenomenon of accent in terms of parallel facts which they had observed in music proper. That this was not an "artificial systema-

[1] The passage may again be quoted from Burnell's Edition of Ṛktantravyākaraṇa, p. xl:

udātte niṣādagāndhārāv anudātte ṛṣabhadhaivatau
svaritaprabhavā hy ete ṣaḍjamadhyamapañcamāḥ.

[2] "Intonation Curves, and Outline of English Phonetics," 2nd Edition, pp. 136 ff.

[3] "French Intonation."

tization" but the observation of a living connection between music and accent is further corroborated by the Saṃhitopaniṣad Brāhmaṇa, according to which, in several chants of the Sāmaveda, the low accent becomes high—e.g., "in the Saṃhitā text of the Sāmaveda, the syllable *vī* is marked low, but in the Parka hymn it is *sung* very high,"[1] while "during a musical series in which the third note was followed by the second, and the second by the first (3:2:1), 'the high becomes the highest' (*udāttatama*), and is designated as *udūha*."[2]

These facts indicate that our authorities had observed a living connection between accent and music, and that it was not a case of mere "artificial systematization," for the accent varied with different musical conditions. It also seems to have varied with different dialects, as another passage of the same Brāhmaṇa indicates. It refers to certain schools in which the syllable which was pronounced as high in the Lāṅgala school was said to be articulated low in other schools, and vice versa.[3]

We have, unfortunately, no means at present of estimating the accuracy of the details regarding the relation of accent to the various notes in the musical scale. And yet these passages strikingly indicate the general view-point of Indian grammarians regarding accent, showing that by accent they meant predominantly a musical accent. The relation of the Svarita accent to the highest notes in the musical scale, mentioned by the Pāriśikṣā, is another interesting point, which seems to tally with the Ṛg Prāt.'s observation that the first half-mora of the Svarita was higher than the high accent.[4] If the Svarita was the origin of the highest musical notes, its intonation was likely to be high enough to render at least conceivable the extraordinary theory of the Ṛg Prat. regarding the Svarita. I say 'extraordinary' because the Vedic Svarita generally arose out of the low accent when the

[1] Burnell's Edition, p. 20:

"*sarvatrodāttesv anudāttāni*" *iti.*

Com.: *ārcikasaṃhitāyāṃ* "*vī*" *varṇo 'nudāttaḥ paṭhitaḥ, sa parkasāmni atīvoccair gīyate.*

[2] Ibid., pp. 27-28: *tṛtīyaprabhṛtīnām udāttatamaḥ kaścit svaro bhavati tam udūha ityācakṣate.*

[3] Ibid., p. 29.

[4] III. 2, 3: *tasyodāttatarodāttād ardhamātrārdham eva vā.*

latter was preceded by the high accent. That the succeeding low accent should thereby start higher than even the preceding high accent seems to be an unusual phenomenon. And yet, if the resultant Svarita was observed to be related to the highest musical notes, the high pitch of its starting-point was possibly an actual phenomenon in the Vedic pronunciation noticed by the Ṛg Prāt. Moreover, the rise of the low tone to the level of the preceding high tone has been actually discovered[1] in Sechuana, an African language, and it is not impossible that the preceding high tone in some languages may be a rising tone, and that rise may be carried into the following syllable. A phenomenon of this kind (as Professor D. Jones tells me) is found in Norwegian, where the tones are spread over a stressed syllable and one or more unstressed syllables in certain connections.

While the above facts indicate that accent, according to Indian grammarians, was predominantly musical, it is not unlikely that some authorities implied by accent a combination of both musical and stress accent. For according to Uvaṭa, Patañjali, and Kaiyyaṭa, breath plays an important part in the production of accent. Thus, commenting on the Ṛg Prāt., III. 1, Uvaṭa defines the high accent as that which is due to the upward movement (tension) of vocal organs *caused by breath*, while the low accent is defined as that which is due to the downward movement (relaxation) of vocal organs *caused by breath*.[2] Patañjali does not accept this definition of accent, not because he does not believe in the leading part played by breath in the production of accent, but because the definition does not give a fixed standard of determining what is high and what is low.

Thus, commenting on Pāṇini, I. 2, 29, I. 2, 30, Patañjali remarks: "High and low do not denote a fixed object (in other words, they are relative terms). The same sound may be high for one person and low for another person. Thus when a person is reading to another, the hearer may say, 'Why are you screaming so high? Speak low.' While another person may say to the same reader, 'Why are you muttering between your teeth? Speak high.' What is extremely high for a man of poor *breath* may be extremely low for a man of strong

[1] By Professor Daniel Jones; *vide* his "Sechuana Reader," p. 37, where the low tone of 'le' in *letsatsi*, 'sun,' becomes high when preceded by the high-toned particle *le* 'with.'

[2] *āyāmo nāma vāyunimittam ūrdhvagamanaṃ gātrāṇāṃ tenocyate sa udāttaḥ, viśrambho nāmādhogamanaṃ gātrāṇāṃ vāyunimittam.*

breath."[1] High and low being, therefore, relative terms, both from the standpoints of the hearer and the speaker, Patañjali uses the terms high and low with reference to the various parts of the vocal organs.

"In articulating the high accent," as Kaiyyaṭa[2] says, "the higher part of the articulating organ, by coming into contact with breath, is called into play." According to these authorities, then, it was the particular part of the articulating organs that constituted a fixed standard for determining whether the accent was high or low, and that was the invariable factor of the production of accent. The symbolic representation of the particular accent, according to the Pāriśikṣāṭīkā Yājuṣabhūṣaṇa[3] and the commentary on the Pratijñā Sūtra,[4] was to be made by a movement of the hand. Thus in the low accent, the right hand was to be placed or moved near the heart; in articulating the high accent, the hand was to be near the head; while in the case of the Svarita, the hand was to be near the ear. But, as I have said, these movements of the hand in the direction of the head, the heart, or the ear were symbolic.

Thus, with reference to these movements of the hand, the Pāriśikṣā points out that the high accent occurs when the effort is directed towards the lower part of the vocal organ. The head, then, represented the upper part, the ear the central or transverse part, and the heart the lowest part of the articulating organ.

This theory, which attributes the accent to the various 'altitudes,' if I may use the expression, of the vocal organs, may possibly refer to the raising of the larynx for the high pitch, and its lowering for the low pitch, and if it was intended in this sense, it was sound. The reason which led Patañjali to localize the accent in the various altitudes

[1] *idam uccanīcam anavasthitapadārthakam.*
tad eva hi kañcit praty uccair bhavati kañcit prati
nīcaiḥ. evaṃ kaṃcit kaścid adhīyānam āha kimuccai
rorūyase 'tha nīcair vartatām iti. tam eva tathādhīyānam
apara āha kim antardantakenādhīṣa uccairvartatām iti.

[2] On Pāṇ., I. 2, 29, 30: *ekasmiṃs tālvādike sthāne ūrdhvādharabhāgayukte ūrdhvabhāgenoccāryamāṇa udāttaḥ, adharabhāganiṣpanno 'nudāttaḥ.* Nāgeśa: *ūrdhvabhāgāvacchinnavāyusaṃyogenety arthaḥ.*

[3] *uccair uparibhāge jātena prayatnenoccāryamāṇaś codāttaḥ syāt.* On 99. . . . *evaṃ hastasvaravinyāsam udāttādīnām udāttādisvarāṇām utpattau kāraṇāny āha.* On 81.

[4] I. 4-6 (Benares Edition): *hṛdy anudāttaḥ hṛdayasamīpe dakṣiṇahastenānudāttapradarśanaṃ bhavatīti bhāvaḥ*, etc.

of the vocal organs was the need to determine a fixed standard of accent for all speakers and hearers. There is no doubt that this theory of accent, according to which the high accent proceeds from the highest part of the vocal organ, does not help us to determine whether accent, according to Indian grammarians, was decidedly musical or tonic. And yet the fact that Patañjali and Nāgeśa attribute the high accent to the "higher part of the vocal organs coming in contact with *breath*"—this fact indicates that the element of breath-force was not entirely excluded from the Indian grammarians' view of accent. But the predominance of the musical accent, even according to these writers, is quite plain. Thus Kaiyyaṭa, while expounding Patañjali's theory of accent, remarks, "In this way the word 'high' means the higher part of the vocal organ, while 'low' means the lower part of the organ. These particular accents can be learnt by practice, and should be understood as being like the notes in the musical scale."[1] A comparison with the notes in the musical scale, then, clearly implies that the Indian grammarians meant by accent predominantly a musical accent, though probably they did not entirely exclude from it a combination with stress-accent. I say only 'probably,' because when they attributed the high accent to the breath coming in contact with the higher part of the articulating organ, the mere mention of 'breath' does not necessarily indicate that the resultant accent in their opinion was stress-accent, for the breath-element is not absent from the productive factors of musical accent, just as it is not absent from the musical tones of the human voice.

The Pāriśikṣāṭīkā Yājuṣabhūṣaṇa holds the 'altitude' theory to be only symbolic and secondary, meant only to help the reciter in the articulation of various accents by the movement of the hand, and remarks in this connection: "In the articulation of the high accent, effort is directed towards the upper part of the vocal organs. In the articulation of the low accent, effort is directed towards the lower part of the vocal organs. After thus describing the play of the *hand* during the articulation of accents, the author now proceeds to describe the *causes* of the production of various accents."[2]

"These causes are, in the case of high accent, tension (lit. 'length')

[1] *evaṃ coccair ity anenordhvabhāgo gṛhyate nīcair ity adharabhāgaḥ. abhyāsasamadhigamyaś cāyaṃ svaraviśeṣaḥ ṣaḍjādivad vijñeyaḥ.*

[2] Cf. footnote 3 on p. 163.

of the organs, firmness of the voice, and narrowness of the cavity of the throat; in the case of low accent, looseness (lit. 'shortness') of the organs, weakness (lit. 'gentleness') of the voice, and wideness of the cavity of the throat."[1] The same theory has been advanced in the Taitt. Prāt., XXII. 9, which has been also quoted by Patañjali on Pāṇ., I. 2, 29-30. Two of the conditions mentioned in this theory—viz., tension of the organs and firmness of the voice—would be common both to stress and musical accent; but the second condition—viz., narrowness of the cavity of the throat in the case of high accent, and its wideness in the case of low accent—would have been impossible if only stress-accent had been intended, for a high accent, if expiratory, would have required a copious emission of breath, and consequently a widening, and not narrowing, of the cavity of the throat. Even this passage, then, indicates that musical accent was predominantly intended, though the other two conditions mentioned do not exclude the possibility of stress-accent.

The Pāriśikṣāṭīkā Yājuṣabhūṣaṇa, therefore, rightly interprets the 'altitude' theory to be only symbolic (though it may have a natural basis, for people have generally the tendency to raise their head for a high note, and to lower it for a low note), the movement of the hand in the direction of various organs being only an accessory help to the reciter. In addition to this accessory movement of the hand, the Cārayaṇīya Śikṣā also mentions the movement of the eye, and remarks, "One should always articulate accent properly, indicating the direction of the accent by a movement of the hand. In the case of high accent, one should cast a contracted glance of the right eye on the junction between the nose, the cheeks, and the eyebrows."[2]

[1] *yad gātradairghyaṃ dṛḍhatā ca yā dhvaneḥ*
tathāṇutā kaṇṭhabilasya yā ca
etāni kurvanti ca śabdam uccair
yad dhrasvatā yā mṛdutā svarasya
yā vistṛtā kaṇṭhabilasya caitāḥ
karāṇi śabdaṃ nihataṃ ca nityam.
(Pāri Ś., 81, 82.)

[2] MS. Göttingen, Fol. 6: *samaṃ svaraṃ paṭhen nityaṃ mārgaṃ haste pradarśayet, yad vāṇī gacchati sthānaṃ tad dhastena pradarśayet. dakṣiṇākṣinipātena dṛṣṭiṃ hanyāt kanīyasīṃ, nāsāgaṇḍabhruvoḥ sandhim udāttaviṣaye viduḥ.*

Professor D. Jones tells me that modern teachers on singing often advise their

These secondary movements of accessory organs, like the movements of a musical conductor's stick, may have offered something like a fixed standard for the regulation of accent in Vedic recitals, but the Pāriśikṣāṭīkā is right in interpreting that neither these accessory movements nor the various altitudes of the vocal organs were the causes of accent, and if Patañjali's fixed standard be taken in this restricted sense of accessory guidance, his theory may be accepted, though it does not help us to determine the essential nature of Vedic accent.

Accent and Quantity.

The Āraṇya Śikṣā[1] mentions an interesting theory, according to which "the final syllable of a word has the low accent, if the penultimate is long; but it has the high accent, if the penultimate is short." The Śikṣā, however, refuses to accept the theory as a general principle.

The passage in which this theory has been mentioned, first enumerates words in the Taittirīya Āraṇyaka which end in two syllables with a high accent—e.g., *avalumpátú*, which occurs in X. 24, 1, X. 25, 1. The normal accent of the word should have been only on the penult, thus *avalumpátu*. But an objector here suggests that an enumeration of such words is unnecessary, for "the high accent of the final syllable *tú* could be explained by the general principle that with a short penultimate (as *pá* in the above example) the final syllable has the high accent." The Śikṣā, however, states that this phenomenon often occurs, but it cannot be accepted as a general principle, for "it is contradicted by such examples as '*tilāḥ, kṛṣṇāḥ*'."

The Śikṣā is right in asserting that the correspondence long penultimate : unaccented final, short penultimate : accented final,

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pupils to "make their voice issue between the eyes." According to Sir E. D. Ross, it possibly meant a change from the "open" to the "covered" note, in which the voice is presumably placed at the back of the nose.

[1] *nanu "áhas tád avalumpátú" "rā́tris tád avalumpátú" iti vākyadvayasya śrutivākyatvād evādyantodāttatve siddhe punar atra grahaṇaṃ vyartham iti cet, satyam, śrutivākyasyāntodāttatva-niyame 'py udātta-dvayāntaniyamābhāvena tanniyamārtham atra grahaṇam. laghūpāntyaśrutivākyasya tanniyama iti cet tilāḥ kṛṣṇā ityādau vyabhicāreṇa tan-niyamābhāvāt "upāntyas tu guruḥ syāc cen nihataṃ tatra ceṣyate, laghuś cet tad udāttaṃ syācchrutivākyeṣu manyate" iti vacanasya prāyikatva-tātparyād iti.* Com. on 27.

often occurs in Vedic words. This is true of words like the following:

Long Penultimate.	Short Penultimate.
devéna	*pitā́*
déva	*pitúḥ*
kā́maḥ	*padā́*
devébhiḥ	*padé*
vā́ri	*prajā́*
śátruḥ	*purā́*
yajñásya	*tṛṣú*
vā́cam	*ayám*
gátyā	

And the Śikṣā is also right in maintaining that the theory is untenable if it is accepted as a general principle, as the following counter-examples will show:

Long Penultimate.	Short Penultimate.
agním	*agnínā*
pitrā́	*agnáye*
pitré	*gátiḥ*
kṛṣṇā́ḥ	*gátim*
kumārā́ḥ	*svásuḥ*
rudrā́ḥ	*sádaḥ*
sakhyúḥ	*jágat*
svargā́ḥ	*yúvā*

It is not unlikely, however, that the theory in question refers to a later stage in the development of the Sanskrit tone accent, when it was converted into a stress-accent. The quantity of the penultimate syllable seems to have played some part in the development of this stress-accent, although, as has been rightly pointed out by Professor Turner,[1] the opinion that Prākrit stress depended on the quantity of the penultimate syllable cannot be accepted as a general principle for all Prākrits.

The long penultimate, in some examples at least, became stressed — e.g., Skr. *kāca-*=Prakrit *kacca-*; Skr. *tailá-*=Prakrit *tella*. It is not unlikely, then, that the theory mentioned by the Śikṣā refers to the stress-accent of the penultimate, which may have left the final

[1] The Indo-Germanic accent in Marathi, JRAS, 1916, pp. 212 ff.

syllable with a weak expiratory accent. Again, the examples quoted by the Śikṣā from the Taittirīya Āraṇyaka are also interesting; the two high accents, as in *avalumpátú*, probably refer to the development of the secondary accent[1] which has been noticed in the later stages of Sanskrit and Prākrit.

Again, the Vaidikābharaṇa[2] quotes another interesting theory from a Śikṣā, according to which the quantity of a "Svarita-receiving consonant" was lengthened. It states that "the beginning of Svarita is like the high accent, but the end is like the low accent. This second stage (i.e., the low accent), however, sometimes does not occur in vowels, but only in the consonants which are adjuncts to those vowels, and these consonants are called 'Svarita-receiving.' They cannot then be pronounced without a longer duration."

This was a remarkable observation, and very probably accurate. For by the author's own statement, the Svarita was a high-falling tone. Now it has been noticed by modern phoneticians (as I learn from Professor Daniel Jones) that a lengthening of the following consonant sometimes accompanies a high tone in English when that high tone is used for emphasis—e.g., *n* in *splendid*, *tremendous*, and *t* in *a little*. My own pronunciation seems to illustrate a similar phenomenon. Kymograph measurements have shown that the quantity of the consonants *d* and *t* in the Lahndi words *lît* and *lîd*, pronounced with a high-falling tone, was appreciably longer than in the case of *lit* and *lid*(ə), which were pronounced with a low monotone. The average length of *d* and *t* in the former case was 17·3 and 16·7, and in the latter case 9·12 and 13·7 hundredths of seconds respectively.

But this observation regarding the lengthening of the consonant does not seem to be confirmed in the case of consonants after the high-falling tone of Lahndi as a word accent. For similar kymograph measurements showed that the average length of the consonant after

[1] Ibid., p. 240.

[2] On Taitt. Prāt., I. 37:
svarita-grāhiṇāṃ vyañjanānāṃ kālādhikyam uktaṃ śikṣāyām:

> *svārāḥ kampāś ca raṅgāś ca ye yatkālāḥ svabhāvataḥ vardhante procyamānās te kṣiprayatne 'pi vaktari. atra svaritānāṃ kālavṛddhi-vacanaṃ tadgrāhi-vyañjanārtham eva . . . tad anudāttasamatvaṃ keṣucitsvaritasvareṣu na bhavati kintu tadaṅgabhūteṣu vyañjaneṣv eva tāni svaritagrāhīṇīty ucyante. teṣāṃ kālādhikyaṃ vinoccāraṇaṃ na ghaṭate.*

the high-falling tone in *bâggi* (' carriage ') and *vâḍia* (' cut ') was even snorter than in the case of *baggi* (' white ') and *vaḍia* (' O great one !'), the average length of *g* and *ḍ* in the former case being 15·8 and 9·1, and in the latter case 16·3 and 13·2 hundredths of seconds respectively. The phenomenon, however, seems to be true of consonants following the high-falling tone of sentence accent used for emphasis.

CHAPTER XI

QUANTITY

THE idea underlying the grouping of sounds into short, long, and puta was said to be duration. As the Pāṇinīya Śikṣā says, "Short, long, and overlong ('pluta') are determined by time."[1] From the standpoint of duration, human speech was said to be of three kinds—viz., quick, intermediate, and slow. According to Kaiyyaṭa,[2] the quantity of sound in intermediate speech was one-third more than in quick speech, the ratio being 9:12. The quantity of sound in slow speech was one-third more than in intermediate speech, the ratio being 12:16. Kaiyyaṭa connects the perception of this ratio with a psycho-physical process affecting the nervous system of the hearer. The ratio 12:9 implied that "twelve drops of the nervous fluid flow from the Suṣumṇā nerve of the hearer when he hears intermediate speech, while the number of drops in the case of quick speech is nine."

As regards the exact ratio of quantity between these three kinds of speech, authorities naturally differed. Thus, while Kaiyyaṭa states the proportion to be 9:12:16, the Ṛktantra Vyākaraṇa[3] maintains the proportion 3:4:5, while Uvaṭa[4] mentions some authorities holding the proportion 16:20:25. According to the Māṇḍūkī Śikṣā,[5] the interval between a series of intermediate sounds was one more than in quick sounds, while the interval between a series of slow sounds was "two more than in quick sounds, the proportion being 1:2:3."

[1] ŚS, p. 379:

hrasvo dīrghaḥ pluta iti kālato niyamā aci.

[2] On Pāṇini, I. 1, 70: *drutaṃ ślokam ṛcaṃ voccārayati vaktari nāḍikāyā yasyā navapānīyaphalāni sravanti tasyā eva madhyamāyāṃ vṛttau dvādaśa phalāni sravanti. nāḍikā*, according to Nāgeśa, is here the Suṣumṇā nerve, and *phalāni* the drops of nectar flowing from this nerve when it is in unison with the universe.

[3] Page 10: *drutāyāṃ mātrā trikalā, catuṣkalā madhyamāyām, pañcakalā vilambitāyām.*

[4] On Ṛg Prāt., XIII. 98.

[5] ŚS, p. 463: *madhyamaikāntarā vṛttir dvyantarā hi vilambitā.*

It is difficult to judge how far the above ratios of duration were accurate. I have consulted in this connection a leading authority on shorthand, Principal Holland (of Pitman's School, London), and he informs me that "either the maximum or the minimum rate of speech would be difficult to ascertain, as speech is an individual matter. . . . Roughly, one can say that the average rate of speaking in ordinary conversation is round about 140 words per minute. Lecturers vary from 120 up to 200, the latter rate being for short spurts only." Now if a ratio of duration be taken from these figures. it would roughly vary between 2:3 (i.e., $\frac{140 \times 60}{200}$:60) and 13:15 (i.e., $\frac{140 \times 60}{160}$:60) for quick and intermediate speech respectively. The former ratio would then nearly approach Kaiyyaṭa's (9:12), while the latter would roughly approach the results given by Uvaṭa's authorities (16:20). These figures, then, indicate that the calculations of Indian grammarians were not merely fanciful, but were based upon considerable observation.

Our grammarians prescribed the use of these three kinds of speech under different conditions. Thus according to Ṛg Prāt.,[1] "quick speech should be used in Vedic recitals, intermediate in business, and slow during instruction." The Māṇḍūkī Śikṣā[2] recommends the use of intermediate speech, for "in slow speech defects can be easily detected, while in quick speech sounds are indistinct. But a well-educated teacher gifted with a good voice may use any of these three forms of speech."

So when the question of fixing a standard of quantity arose, the basis selected was intermediate speech. Thus the Kālanirṇaya Śikṣā, a manuscript work exclusively devoted to quantity, states in this connection that "we cannot speak of time as being uniform in the case of vowels, consonants, and the pause in all the various kinds of speech. This treatise (on duration) is based on intermediate speech, for other kinds of speech have been prohibited by the Prātiśākhyas."[3] It is evident that intermediate speech, which presumably represented

[1] V. 21. [2] ŚS, p. 463.

[3] *svaravarṇa-virāmāṇāṃ bhinnavāg-vṛttivartinām*
aika-rūpyeṇa kālasya kathanaṃ nopapadyate. 3.
madhyamāṃ vṛttim āśritya mayā ceyaṃ kṛtiḥ kṛtā
prātiśākhye niṣidhyānye yasmāt saiva bodhyate. 4

ordinary conversation, was the only practical basis for the definite determination of quantity.[1]

Quantity Independent of Quality.

Patañjali maintained that quantity did not affect the quality of a sound. For, as Kaiyyaṭa explains it, when a pot is perceived again and again, it does not appear to be different. It is the same pot, and is perceived to be the same pot, in spite of our observation for a short or a long time. Duration does not affect its identity. In the same way, a sound, say the vowel *a*, is not really affected by duration, though apparently it is. "In slow speech *a* is *repeatedly* heard, but it is the same *a*, and is perceived as the same *a*." This appears to be a piece of ingenious subtlety, by which Kaiyyaṭa conceives of a comparatively long *a* as if made up of a series of short *aaaa*, and if he seriously meant it, he was wrong, for a breach in the continuity of a long vowel has no phonetic basis. But, as the succeeding paragraphs will show, it does not seem that he really meant it, for he, with all Indian grammarians, believes sound to be ultimately indivisible.

Again, continues Kaiyyaṭa, a drum-beat is heard, sometimes for a short time, sometimes for a long time, and sometimes for a very long time, but it is the same drum-beat. It is like three persons starting on a journey: one goes in a car, another on a horse, and the third on foot —modes of progression which are respectively quick, slow, and very slow. But the road by which they proceed on their journey is the same throughout. The road, being the substratum, is not affected by duration. It is the same for all the three. "From this standpoint sound has two aspects, apparent and real (*vaikṛta* and *prākṛta*). Apparent sound is affected by duration, and we then call it short, long, and pluta. Real sound is Sphoṭa, an indivisible, sonorous whole, and is not affected by duration."[2]

[1] Cf. Sievers, "Phonetik," 5th Edition, p. 257, where he defines "the natural quantity of a short sound as the minimum time required for the distinct articulation of an accented syllable in intermediate speech (*bei mittlerem Redetempo*)."

[2] On Pāṇini, I. 1, 70: *ghaṭaḥ punaḥ punar dṛśyamāno 'pi na bhedam avalambate, tathā vilambitāyāṃ vṛttāv akār eva punaḥ punarupalabhyata iti vṛttibhede 'pi varṇasya bhedo na gṛhyata iti sarvavṛttiṣu tatkālatvam. hrasvadīrghaplutās tu svata eva bhinnābhinnair dhvanibhir vyajyanta iti teṣāṃ kālabhedaḥ. yathā prayatnavaśād utpanno bherīśabdaḥ kaścid alpakālam upalabhyate kaścic ciraṃ kaścic cirataraṃ ca, evaṃ vṛttiṣūpalabdhīnāṃ kālabhedo viṣayasya tv abheda eva. tam evādhvānaṃ*

What, then, is the function of the individual sounds which constitute a word? Each individual sound, says Bhartṛhari, creates an impression (lit. 'seed') in the human mind, which is able (lit. 'mature') to perceive the word when the last sound has been heard.[1] In other words, the mind receives the impressions of individual sounds, but it is only the last sound with the cumulative effect of the previous impressions that enables the mind to perceive the word. Individual sounds, then, are only a means to an end—viz., the manifestation of the really indivisible whole—the word, technically called "Sphoṭa." "It is this Sphoṭa that is the sole reality in linguistics; the parts, viz., the individual sounds, have only an illusive existence."

The above discussion shows that Kaiyyaṭa did not really maintain the breach of continuity of individual sounds. When, therefore, he speaks of a long *ā* as a repetition of several short *a*'s, he only resorts to imagery in order to support his thesis that the quality of a sound is not affected by its quantity. This is further corroborated by the fact that Patañjali strongly maintains the continuity of sounds when coming in immediate contact with other sounds. There is no doubt, says Patañjali, that time is a necessary element in the pronunciation of every group of sounds, and that no two sounds can be simultaneously uttered by the same speaker. Nāgeśa[2] thus illustrates it: utterance of different sounds, like the various organic movements of a dancer, cannot be simultaneous. In sounds as well as in the dancer's movements, "there is always a sequence of different movements, although this time-element, owing to its minuteness, is not perceived." But, says Patañjali, sequence does not affect the continuity of sounds. Two sounds, when uttered one after the other, have a contiguity (*saṃhitā*) whether they are pronounced in quick, intermediate, or slow speech.

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rathika āśu gacchaty āśvikaś cireṇa padātiś ciratareṇa. . . . evaṃ tarhi sphoṭaḥ śabdo dhvaniḥ śabdaguṇaḥ. "varṇasya grahaṇe hetuḥ prākṛto dhvanir iṣyate, vṛttibhede nimittatvaṃ vaikṛtaḥ pratipadyate." Vākyapadīya, I. 77.

1 Vākyapadīya, I. 85-86:
nādair āhitabījāyām antyena dhavaninā saha, āvṛttaparipākāyāṃ buddhau śabdo 'vadhāryate. asataś cāntarāle yāñ chhabdān astīti gamyate pratipattur aśaktiḥ sā grahaṇopāya eva saḥ.

2 On Pāṇini, I. 4, 109:
vastuto yatnāyaugapadyam eva narttakyā nānāvayavāvacchinnakriyāḥ kṣaṇabhedenaiva kālasaukṣmyāt tu tadagraha ity āśayaḥ.

Continuity of sounds is not confined only to quick speech. The relative proximity of two sounds is therefore the same in all the three varieties of speech. For, continues Patañjali, contiguity here means that the continuity of the sounds is not broken, though their perceptibility in time may differ.[1] For instance, the contact of an elephant with another, or the contact of a mosquito with another, is the same, relatively speaking, although the space which their bodies occupy is different. But "the difference of space does not affect the degree of continuity or proximity which the elephant and the mosquito have to their fellow beings."[2]

In connection with his theory of the continuity of two sounds Patañjali makes a very interesting observation. He states that "the proximity of two sounds also implies the continuity of *voice*. Thus a breathed intervocalic consonant is slightly vocalized under the influence of the two adjacent vowels—e.g., *c* in *pacati* is affected (lit. 'covered') with the voiced sound from the two adjacent vowels, just as a white cloth placed between two red pieces of cloth appears to acquire their quality of redness."[3] This remarkable observation of a living phenomenon, so conspicuously reflected in Prākrit, indicates that it had come to the notice of our grammarians as early as the second century B.C., and shows how wonderfully accurate their observation was.

To sum up, then, Patañjali's theory of quantity gives us two main principles: (1) rate of speech does not affect continuity; (2) quantity is independent of quality. The first principle, within certain limits, seems to be valid. There is no doubt that quantity often modifies the syllabic division of words, but this does not necessarily effect a break in the chain of connected speech. And Patañjali is, on the whole, right in observing that continuity is not broken even in slow speech, if he refers only to normal and unaffected speech. The first

[1] *tulyaḥ saṃnikarṣo varṇānāṃ drutamadhyamavilambitāsu vṛttiṣu. kiṃ kṛtas tarhi viśeṣaḥ, varṇānāṃ tu kālabhūyastvam.*

[2] Kaiyyaṭa on Pāṇini, I. 4, 109:
hastino hastinā yaḥ saṃnikarṣo maśakasya maśakena sa tulyaḥ parasparāpekṣayetyarthaḥ. hastinau mahāntaṃ deśaṃ vyāpnuto maśakau tu svalpam. nairantaryaṃ tv anavaśiṣṭam ity arthaḥ.

[3] On Pāṇini, I. 4, 109: *hrādāvirāmaḥ saṃhitā . . . atha yatraikaḥ pacaty ekaḥ pūrvāparayor hrādena pracchādyate* (Com.: *dvayor akārayor ghoṣavator madhye cakāro ghoṣavān iva lakṣyata ity arthaḥ.*) *tad yathā dvayo raktayor vastrayor madhye śuklaṃ vastraṃ tadgunam upalabhyate.*

principle therefore indicates that the infinitesimal pause which he mentions as occurring between two individual sounds (see p. 173) was only a phantasy, and that he did not actually believe in it. Kaiyyaṭa's explanation that a long *ā* appears to be a repetition of several *a*'s, if strictly taken, would be inconsistent with this principle of continuity: the statement, however, was presumably an attempt to explain symbolically the sequence during the process of a long quantity, which modern science describes in terms of vibrations.

Patañjali's second principle—viz., that the quantity of a sound is independent of its quality—is evidently indisputable. But Patañjali's statement is very suggestive, and opens up a great subject for inquiry —viz., whether our grammarians' classification of the so-called long and short vowels was actually based on a quantitative or a qualitative difference. The treatment of the co-ordinate vowels in the Prātiśākhyas[1] is straightforward; they speak of the long and the short vowels as *samānākṣara*—simple vowels, based on quantitative difference—or *savarṇa* (lit. 'of the same colour'), with the same place of origin and way of articulation. But, as is well known, both Pāṇini[2] and the Vāj. Prāt. pointed out the fact that short *a* was "close," and that to regard it as the short of long *ā* was only conventional. The commentary on the Vāj. Prāt.[3] states in this connection that "a qualitative similarity between *a* which is close and *ā* which is open, is not possible, but they are treated as if they are qualitatively similar." Our grammarians, then, recognized that in the case of the vowel *a* a difference of length was associated with a difference of quality, though they ignored it for grammatical purpose.

As regards the relation between vocalic quality and quantity, our grammarians are, on the whole, silent. Only a single line occurs in the Pāṇinīya Śikṣā that "a close sound has one mora, but an open sound has two moras."[4] It is not certain whether the author here confuses a close vowel with a short quantity, or whether he refers to an actual pronunciation in which close vowels were short. The latter case was possible in some dialects. This connection between quality

[1] Ṛg Prāt., I. 11; Vāj. Prāt., I. 43, 44; Taitt. Prāt., I. 2, 3.

[2] VIII. 4, 68.

[3] I. 72: *saṃvṛtāsyaprayatnasyetarayoś ca vivṛtāsyaprayatnayor dvimātrikatrimātrikayoḥ sāvarṇyaṃ tulyaṃ na sambhavatīti savarṇavac ca kāryyaṃ bhavati.*

[4] ŚS, p. 380: *saṃvṛtaṃ mātrikaṃ jñeyaṃ vivṛtaṃ tu dvimātrakam.*

and quantity in many languages is recognized by modern phoneticians.[1] My own pronunciation of the Lahndi vowels shows the same phenomenon—viz., a longer quantity in the case of open vowels, but shorter in the case of close vowels in similar situations. For kymograph measurements have shown that the average duration of the open short vowel *a* in *chaṭ* was 10·10, but of the closer vowels *i* and *u* in *chiṭ* and *chuṭ* was 8·5 and 9·7 hundredths of seconds respectively. Again, the average duration of the open long vowel *ā* in *rās* was 30·9, but of the closer vowels *ī* and *ū* in *rīs* and *rūs* was 19 and 26·2 hundredths of seconds respectively. The quantity of open and close sounds must have, of course, varied with different dialects, as it does in English, French, and German.[2]

Standards of Quantity.

The minimum standard of quantity was called *aṇu*, which, however, was said to be "too delicate" for perception.[3] Thus the quantity of the voiced off-glide of a final voiced consonant was said to measure an *aṇu*,[4] which "could not be described" in terms of any other standard. The Lomaśī Śikṣā compares the *aṇu* to a "particle (of air) reflecting the sun's rays,"[5] the spatial comparison being presumably intended to convey an idea of its delicate nature.

Next to this imperceptible scale came a standard which, according to the Vyāsa Śikṣā,[6] was "just perceptible." This was called *paramāṇu*,[7] being equal to two *aṇus*; e.g., a consonant was generally measured as a *paramāṇu* or half-mora. This is another significant example of the unimportant position that Indian grammarians ascribed to consonants, which, according to this standard, were "just per-

[1] Cf. Jespersen: "Lehrbuch der Phonetik," p. 181. From Meyer's measurements of English and German vowels Jespersen concludes that it is a general rule in language that close vowels are shorter than open vowels in similar situations.

[2] Daniel Jones, "Outline of English Phonetics," 2nd Edition, p. 104; Roudet, "Élémentes de Phonétique générale," p. 234.

[3] Śambhu Śikṣā, 46:

indriyāviṣayo yo 'sāv aṇur ity ucyate budhaiḥ.

Vyāsa Śikṣā: *kālo 'ti sūkṣmako 'ṇuḥ syāt.* XXVII. 2.

[4] Cf. Uvaṭa on Ṛg Prāt., VI. 11.

[5] ŚS, p. 462: *sūryaraśmipratīkāśā kaṇikā yatra dṛśyate.*

[6] *mātrārdhaṃ vyaktamātrakam.* XXVII. 2.

[7] Vāj. Prāt., I. 61: *paramāṇv ardhamātrā.*

ceptible." There were perhaps phonetic grounds for this view; for final consonants in Sanskrit were incompletely articulated, and eventually disappeared; while intervocalic consonants also, to a great extent, met the same fate. Initial consonants, if members of a group, generally belonged to the preceding syllable in connected speech, and as in this case their quantity increased, they were said to be doubled, their quantity then becoming a full mora according to this standard. But it is hardly likely that the quantity of an initial consonant when followed by a vowel was always "just perceptible."

Next to the *paramāṇu* came the standard actually current—viz., the *mātrā* or the mora. The quantity of a mora was analogically described in several ways. It was compared by the Vyāsa Śikṣā[1] to a snap of the finger, by the Nārada Śikṣā[2] to a twinkling of the eye, by some authorities[3] to a flash of lightning, and by the Ṛg Prāt.[4] to "a note of the woodcock." In the absence of delicate instruments, these comparisons served as useful guides, though the "flash of lightning" was too quick for a mora—the quantity of the short vowel.

Next to the mora came the two-mora standard—the quantity of the long vowel—and was compared to the cawing of the crow, while the three-mora standard—that of the ultra-long or "pluta" vowel—was compared to the "note of the peacock."[5] These comparisons also were evidently only rough conventional guides, otherwise it was hardly likely that the duration of the pluta in connected human speech could be actually so long as the note of the peacock.

The current practical standard of quantity, then, was the mora, and was subdivided into four parts, called the four *aṇus*. The Cārāyaṇīya Śikṣā[6] gives a curious physiological correspondence of these *aṇus*. The seat of one *aṇu*, called the *Maṇḍala*, was in the heart; that of two *aṇus*, called the *dvirāṇava*, was in the throat; that of three *aṇus* was on the front of the tongue; while the mora was physiologically spoken of as being "diffused." Was it mere phantasy, or has it some actual basis? Perhaps it symbolically represents a

[1] XXVII. 3: *aṅgulīsphoṭanaṃ yāvān tāvān kālas tu mātrikaḥ.*

[2] ŚS, p. 432: *nimeṣakālā mātrā syād vidyut kāleti cāpare.*

[3] Ibid., *op. cit.*

[4] XIII. 20: *cāṣas tu vadate mātrām.*

[5] Ṛg Prāt., XIII. 20.

[6] MS. Göttingen, Folio 7*b*: *hṛdayasthaṃ maṇḍalaṃ vidyāt kaṇṭhe vidyād dvirāṇavam, trirāṇavaṃ tu jihvāgre visṛtaṃ mātrikaṃ bhavet.*

feeling of upward diffusion when a comparatively long sound is pronounced, the sound seeming to traverse a wider area and towards the higher vocal organs.

Rules of Quantity.

The rules of quantity, according to the Kālanirṇaya Śikṣa, were of three kinds—viz., "(1) those relating to vowels ('indivisible sounds'), (2) consonants ('adjunct sounds'), and (3) the pause."[1]

There was another item, however, the quantity of which has been copiously dealt with in Indian grammatical works—viz., the Anusvāra. The author presumably included it among either vowels or consonants.

Quantity of Vowels.—Vowels were classified as short, half-long, long, and ultra-long (*pluta* or *vṛddha*). Of these four, the half-long or *kṣipra* deserves particular notice, as it is interesting to note that the various gradations of vowels, mentioned by modern phoneticians, did not entirely miss the observation of our grammarians. The term '*kṣipra*' ('quick') occurs in a passage in the Pārāśarī Śikṣā, in which the *kṣipra* is spoken of as a variety of the long vowel, its quantity being one-half of that vowel. The whole passage may be translated as follows: "The *kṣipra* variety of the long vowel is said to be an interval (of a snap ?[2]) of the finger: the *kṣipra* has one-half the quantity of the long vowel. A long vowel cannot be further lengthened (presumably referring to Sandhi rules, in which two longs=one long). The number (of moras) of the fricative is said to be equal to that of a long vowel: half of its quantity should be taken as the *kṣipra*."[3]

The quantity attributed to the *kṣipra*, however, seems to be contradictory; for it may be confused with that of a short vowel, which also was measured as one-half the quantity of a long vowel. Thus in another verse in the same passage the author says, "With a mora added, the vowel becomes long; with a mora reduced, the vowel becomes short (*hrasva*). Know this to be the quantity of a vowel (lit. syllable).

[1] *akhaṇḍa-varṇa-viṣayo varṇāṃśa-viṣayo 'pi ca, virāma-viṣayaś ceti trividhaḥ kāla ucyate.* 2. Com.: *akhaṇḍa-varṇāḥ svarāḥ anaṅgatvāt varṇāṃśa-viṣayo vyañjanaviṣayaḥ.*

[2] Cf. Vyāsa Śikṣā (quoted on p. 177): *aṅgulīsphoṭanaṃ yāvān tāvān kālas tu mātrikaḥ.*

[3] ŚS, p. 55: *kṣipraṃ dīrghaṃ samākhyātam aṅgulyām ekam antaram, dīrghasyārdhaṃ bhavet kṣipraṃ nāsti dīrghasya dīrghatā, yathā saṅkhyā tu dīrghasya tathā coṣmā prakīrtitā, ūṣmā dīrghaṃ samatvaṃ ca kṣipraṃ kuryāt tad-ardhakam.*

The *kṣipra* is a long vowel."[1] Unfortunately the author does not give any examples of *kṣipra*; but some of the Śikṣās give examples of what they call "slightly long vowel." Thus the Keśavī Śikṣā states that in connected Vedic texts (Saṃhitāpāṭha) of the Vājasaneyi Saṃhitā, "a short vowel is pronounced slightly long. Thus the *i* in *iṣé tvorjé*, the short *a*'s in *vāyáva stha deváḥ*, the *i* in *paśū́n pāhi*, will be pronounced slightly long." But when the short vowels are followed by a syllable containing a *long ā*, they are not lengthened; e.g., "the *a* and *i* of *savitā́*, and *a* (in *ja*) of *yájamānasya*, are not lengthened."[2] The non-lengthening of the vowels before long *ā* possibly implies the effect of stress on the succeeding syllable, a phenomenon which has not been specifically mentioned by Indian grammarians. According to the Pratijñā Sūtra, however, which this Śikṣā professedly follows, only the *a* of an initial syllable was slightly lengthened; thus the short *a*'s of the initial syllables *vá* and *pa* in *vásoḥ pavítram* were slightly lengthened, but not the short vowels in *vāyáva stha*, as they did not belong to an initial syllable.[3]

Again, the manuscript work the Pāriśikṣāṭīkā Yājuṣabhūṣaṇa[4] points out that a short vowel should be pronounced like a long vowel in the Kampa accent (a form of Svarita when it was depressed before another Svarita or Udātta), as in *pitṛdevatyāṃ hy̑ etát*, where the final *a* of *pitṛdevatyāṃ* was to be pronounced "like a long vowel" before the succeeding Svarita. Perhaps here also a half-long vowel was intended.

The ultra-long vowel was usually called *pluta*, a term which the Vaidikābharaṇa[5] etymologically explains as that which, "like an arrow, is far-reaching," presumably from *plu*, to "jump." Another term, *vṛddha*,[6] has also been used, though a few manuscript works

[1] ŚS, p. 55: *mātrā (?) saha bhaved dīrghaṃ hrasvaṃ mātrāṃ vinā bhavet, ity akṣaraṃ vijānīyāt kṣipraṃ dīrghaṃ bhaved iti.*

[2] ŚS, pp. 147-148: *hrasvaṃ kiṃcid dīrghaṃ halyutākāre halvisargayugvarṇe ca na saṃhitāyām.*

[3] III. 5: *pādyasya saṃyuktākārasyeṣad dīrghatā ca bhavati.* Cf. the modern tendency in Nepali to lengthen initial short vowels (according to a private communication from Professor Turner).

[4] *sa kampa evātra yathāhi dīrghaṃ tathoccared dhrasvam api prakampe.* 113.

[5] On Taitt. Prāt., I. 36:

śarādivad dūragāmitvāt pluta ity ucyate.

[6] Ṛktantra-Vyākaraṇa, II. 44: *tisro vṛddham.*
Lomaśī Śikṣā, ŚS, p. 456: *hrasvaṃ dīrghaṃ tathā vṛddham abhigītaṃ tu sāmagāḥ.*

point out a distinction between *vṛddha* and *pluta*. Thus the Hrasvadīrghaplutamātrālakṣaṇa (a manuscript treatise on the moras of vowels) says, " A short vowel with two moras added is called *pluta*, but a long vowel with a mora added is called *vṛddha*."[1] This distinction was interesting; for the ultra-long vowel arose from the long or the short vowel in various contexts: no Sanskrit word with an original ultra-long vowel has been met with. So when a short vowel became ultra-long, it was aptly called *pluta* ("having jumped"), owing to the abrupt change that it underwent. But when a *long* vowel became ultra-long, it was called only *vṛddha* ("increased"), the change being comparatively graduated. The quantity of *pluta* was said to be three moras, but the quantity of the pluta diphthongs *ai* and *au*, according to Patañjali, was four moras. The passage in which his view on this point occurs, starts with an interesting and suggestive discussion on Pāṇini, VIII. 2, 106, according to which the second element of *ai* and *au* was *pluta*. Here an objector states the opinion, attributed to Śākaṭāyana,[2] that *both* the elements of the diphthongs *ai* and *au* were equal, being one mora each. Therefore, says the objector, when *ai* and *au* become *pluta*, "both their elements should uniformly increase in quantity, just as all the limbs of a child grow (uniformly) in the mother's womb."[3] Patañjali, however, does not accept this opinion; he seems to follow the opinion, expressed by the Ṛg Prāt.[4] and the Pāṇinīya Śikṣā,[5] that the second element of the diphthongs

[1] *hrasvaṃ dvimātrāsaṃyuktaṃ plutam āhur manīṣiṇaḥ, dīrghaṃ tu mātrāsaṃyogād vṛddham ity abhidhīyate.* Verse 1.
Similarly, Cārayaṇīya Śikṣā, Fol. 6:

> *hrasvaṃ dvimātrasaṃyuktaṃ plutam āhur manīṣiṇaḥ, vṛddhas trimātram evāpi vyañjane tv ardhamātrake.*

[2] As mentioned by Ṛg Prāt., XIII. 16: *sandhyeṣv eko 'rdham ikāra uttaraṃ yujor ukāra iti Śākaṭāyanaḥ.* Cf. Kālanirṇaya Śikṣā: 6. *aikāraukārayor ādāv akāro 'py ekamātrakaḥ ivarṇovarṇayoḥ śeṣau bhavetām atha mātrakau.*

[3] *imāv ecau samāhāravarṇau mātrāvarṇasya mātrevarṇovarṇayor iti tayoḥ pluta ucyamāna ubhaya-vivṛddiḥ prāpnoti. tadyathā, abhivardhamāno garbhaḥ sarvāṅgaparipūrṇo vardhate.*

[4] XIII. 16: *hrasvānusvāra-vyatiṣaṅgavat pare.*

[5] ŚS, p. 379: *ardhamātrā tu kaṇṭhyasya hy ekāraikārayor bhavet, okāraukārayor mātrā tayor vivṛta-saṃvṛtam.* This Śikṣā maintains the second element of *ai* and not of *au* to be longer. Another reading by the commentary on Vāj. Prāt., I. 73, is "*ardhāmātrā tu kaṇṭhyasyaikāraukārayor bhavet,*" according to which the second elements of both *ai* and *au* were longer.

ai and *au* was longer. On the basis of this opinion, he takes Pāṇini literally, and states that the second elements "*i* and *u* of these diphthongs being pluta, the diphthongs *ai* and *au* (including one mora of *a*) have four moras each." Kātyāyana,[1] however, does not seem to take Pāṇini so literally. He interprets the *pluta* of *i* and *u* as "long," and so, according to his opinion, the total moras of the *pluta* diphthongs *ai* and *au* would have been three. Nevertheless, according to the view of both of these authors, the second element tended to be longer in Pluti. This suggests, then, the question whether in the actual pronunciation of *ai* and *au* the second or the first element was longer, or whether both the elements were equal in quantity. Unfortunately, the question cannot be decided in the light of evidence from Pāli and Prākrit, because both *ai* and *au* have disappeared from Middle Indian. Interesting light on this point, however, has been thrown by the Āśvalāyana Śrauta Sūtra.[2] This work prescribes that whenever *e*, *ai*, *o*, and *au* are pronounced *pluta*, they should be resolved (provided that they are not pragṛhya[3]) into ā3i, ā3u; only the first element *a* should be pronounced pluta—e.g., "*dvau* was to be resolved into *dva3u*." And Pāṇini also, after prescribing that the second elements of *pluta ai* and *au* are long, states in the next Sūtra that "in calling somebody at a short distance, the first element of non-pragṛhya diphthongs becomes *pluta* (e.g., *dvau* was resolved into *dva3u*)."[4] It seems to be curious how the quantity of these elements should have so much varied with different contexts: nevertheless, these prescriptions indicate that under certain conditions the first element of the diphthongs *ai* and *au*, being more sonorous, was lengthened rather than the second element.

As regards the various conditions under which the ultra-long vowel occurred, we have few records of it in the Vedic Saṃhitās. Thus, as the Ṛg Prāt.[5] points out, pluta occurs only three times in the Ṛg Veda; in the (White) Yajurveda it occurs only "seven times, there

[1] *siddhaṃ tv idutor dīrghavacanāt.*

[2] I. 5: *vivicya sandhyakṣarāṇām akāraṃ na cet pragṛhyo vyañjanānto vā.* Com.: *yāny apragṛhyāṇi sandhyakṣarāṇi tāni vivicyākāram eva plāvayed iti. ekaraikārayor a3 iti okāraukārayor a3 ity evaṃ vivicya plutiḥ kāryā.*

[3] This distinction accords with the origin of the *pragṛhya* vowel, the final element of which was originally long.

[4] VIII. 1, 107: *eco 'pragṛhyasyādurāddhūte pūrvasyārdhasyād uttarasyedutau.*

[5] I. 16.

does not occur an eighth"—according to the statement of the Amoghānandinī Śikṣā;[1] in the Atharvaveda, according to Whitney,[2] it occurs fifteen times; in the Taittirīya Āraṇyaka, according to the Āraṇya Śikṣā,[3] it occurs "sixteen times." But it seems highly improbable that pluta was confined only to these orthographical texts; it must have occurred in the living speech many more times than these records indicate.

That Pāṇini had noted the ultra-long vowel as a living phenomenon in the language will be indicated by the following interesting data which we find in his Sūtras:

1. Pluta of the final was used in calling somebody at a distance, as in "*āgaccha Devadatta*3 !" ("Come, Devadatta !").[4] According to eastern grammarians,[5] however, even a non-final vowel was lengthened in the above circumstances, e.g. *Devada3tta !* or *De3vadatta !*

This was presumably a dialectical difference due to accent, which may be illustrated by a somewhat similar contrast between Panjabi and Lahndi treatment of accented vowels in the vocative. Thus a Panjabi will call a man, say "Sītāram," as "Sī3tarāmā," while a Lahndi speaker will address him as "Sītarā3mā," in the former case the vowel *ī*, in the latter case the vowel *ā* being comparatively longer.

2. Pluta of the final also occurred in reply to a greeting[6] (except from a Śūdra)—e.g., in "*bho āyuṣmān edhi Devadattá*3 !" ("Live long, O Devadatta !"). The tone of the pluta was said to be high in this case.

But Kātyāyana[7] adds the restriction that pluta was not used in reply to a greeting from "a woman, a Śūdra, or a malicious person." Evidently the person greeted here was a Brahman, and it was the Brahman's pronunciation that has been recorded in this particular case. Yet it seems to be none the less real, alluding to the presumably indifferent tone in which the Brahman replied to greetings from persons of low status.

[1] *sapta plutā bhavanti hy aṣṭamo na vidyate.* Verse 47.

[2] On Atharv. Prāt., I. 105.

[3] *viśvā agniśca sāvitram asanneva dvayaṃ dvayam, devā ekaṃ nakaṃ sapta ṣoḍaśāraṇyake plutāḥ.* 80.

[4] VIII. 2, 84: *durād dhūte ca.* That Prākrit has preserved the pluta in this sense, has been pointed out by Pischel, p. 64.

[5] VIII. 2, 86: *guror anṛto 'nantyasyāpy ekaikasya prācām.*

[6] VIII. 2, 83: *pratyabhivāde 'śūdre.*

[7] Ibid. *op. cit.*: *aśūdrastryasūyakeṣu.*

3. In deliberation.[1] Many of the examples in the Ṛgveda and the Atharva Veda texts indicate this sense—e.g., "*adháḥ svid āsī3t, upári svid āsī3t?*" ("Was it above, or below?"). But here Pāṇini adds the restriction[2] that in secular speech (*bhāṣā*) only the first word or phrase had a pluta final, the second word remained without a pluta —e.g., "*ahir nu3 rajjur nu?*" ("Is it a snake or a rope?").

This seems to be a suggestive observation, but we have unfortunately no means at present to judge its accuracy. Does it imply that the Vedic pluta began to fall into gradual disuse in classical Sanskrit? Or does it indicate that the Vedic language in the time of Pāṇini had become more formal, and its speakers, in academic speech, used the pluta more strictly than they did in actual speech? Nevertheless, these data indicate that they were not fanciful speculations, but based on considerable observation.

Quantity of Consonants.—The quantity of a consonant, according to the majority of our grammarians,[3] was half a mora; but according to the Atharv. Prāt.[4] it was one mora; while in the opinion of the Ṛktantra Vyākaraṇa it was "either a mora or half a mora."[5] It may appear curious to the modern phonetician why the ancients attributed to the consonant a quantity decidedly shorter than they assigned to a short vowel, while the kymograph generally shows the majority of consonants to be often as long as the short vowel, and frequently even longer. But it seems that the view-point of the ancients was different. They seem to have identified the duration of the consonant with the moment of actual *audition*, and neglected, for practical purposes, the on-glide and partly the contact stage of a plosive consonant for the measurement of its quantity. Moreover, vowels as a rule being continuous sounds, tend to take more time than plosive or flapped consonants. If, however, it was only a difference of view-point, the opinion of the Atharv. Prāt. seems to tally more with the modern scientific view.

The quantity of a consonant when followed by another, according to the Vyāsa Śikṣā,[6] was shorter—viz., a quarter of a mora. This

[1] VIII. 2, 97: *vicāryamāṇānām.* [2] VIII. 2, 98: *pūrvaṃ tu bhāṣāyām.*

[3] Ṛg Prāt., I. 16; Taitt. Prāt., I. 37; Vāj. Prāt., I. 59.

[4] I. 60. [5] II. 28: *mātrārdhamātrā vā bhavati vyañjanam ity adhikāraḥ.*

[6] XXVII. 4: *halyuktaṃ haluttaraṃ tad aṇumātraṃ prakīrtitam.*

Com.: *vyañjanaparaṃ vyañjanayuktaṃ vyañjanaṃ pādamātraṃ prayujyate, yathā viśvaphsniyā, halyuktam iti kim, yat tan na.*

observation was very probably accurate, for, other things being equal, the quantum of energy is more likely to be distributed in the articulation of two consonants than of a single consonant—a fact which is likely to affect the quantity of the consonant concerned. Moreover, the great phonological fact of Abhinidhāna (incomplete articulation) in Indian languages seems to further confirm the accuracy of the observation.

The manuscript work the Sarvasammata Śikṣā[1] is of opinion that the quantity of a consonant without a vowel is a quarter of a mora, but when pronounced with a vowel it is half a mora. The reason why a consonant was generally measured as half a mora was said to be "due to its frequent connection with a vowel." According to the author, then, the additional quarter of a mora attributed to the consonant really belonged to the succeeding or the preceding vowel connected with it. There seems to be an element of truth in the author's observation, for, as Roudet[2] has pointed out, when a consonant is followed by a vowel, there is a very short duration (2 to 3 hundredths of a second) of articulating movement which is common to both, and which Roudet is inclined to attribute to the vowel. If this is true, the quantity of a consonant is really shorter than it appears to be, and the author's quarter-mora is only a symbolic way of representing this fact. Moreover, his opinion seems to be consistent with the general view-point of Indian grammarians as indicated above, which identified the quantity of a consonant with the duration of actual audition. The quantity of a fricative, according to the Pāṇinīya Sikṣā,[3] was equal to that of a long vowel. This observation was, on the whole, sound. for fricatives, being continuants, often tend to take longer time than other consonants.

The lengthening of certain consonants after the Svarita accent, mentioned by the Vaidikābharaṇa, has been already pointed out (see pp. 168 ff.).

[1] 94: *asvaraṃ vyanjanaṃ nityam aṇumātraṃ prayujyate, saṃsargācceti bāhulyān mātrā vṛddhaiḥprakīrtitā.*

Com.: *nanv aṇumātram ity uktaṃ hrasvārdhakālaṃ vyañjanam ity uktatvād iti cet, satyam, tad autsargikam, mātrāvṛddhiḥ saṃsargād iti bāhulyāt prācuryena vṛddhaiḥ prakīrtitā.*

[2] Éléments de Phonétique générale, p. 231.

[3] ŚS, p. 55: *yathā saṅkhyā tu dīrghasya tathā coṣmā prakīrtitā. ūsmā dīrghaṃ samatvaṃ ca kṣipraṃ kuryāt tadardhakam.*

Many more details regarding the quantity of consonants have been given by the Vaidikābharaṇa and a few Śikṣās, which presumably refer to pronunciation of individuals or isolated areas, and the accuracy of which we have no means to judge in this age. For instance, the Vaidikābharaṇa quotes a Śikṣā[1] according to which "a consonant after a long vowel is a quarter-mora shorter than after a short vowel." This cannot be accepted as a necessary truth, and must vary with several additional circumstances—e.g., stress, quantity of adjacent sounds, and the phonetic tendencies of a particular speaking area. But other things being equal, this compensatory shortening was no doubt possible, as may be indicated by the simplification of double consonants after long vowels in the living dialects. Again, the quantity of a nasal consonant, according to the manuscript work the Āpiśali Śikṣā,[2] "after a short vowel was equal to that of a long vowel, viz two moras." Observations like this evidently refer to some dialect which it is now difficult to trace.

Quantity of the "Pause."—The third section on the rules of quantity, according to the Kālanirṇaya Śikṣā, was related to the "pause." Indian works on phonetics have given very minute and exhaustive details on the quantity of the "pause," but it is difficult to determine what they really meant by the term, and so it is impossible to examine these details. The commentary on the Vyāsa Śikṣā[3] defines it (*virāma*) as a "time of silence." But the definition becomes obscure when it is applied to the actual phenomena mentioned by our grammarians.

The most important of these phenomena was said to be the hiatus. Thus the quantity of the hiatus in *vā iyam*, when a long vowel was followed by a short vowel, was said to be one mora (according to the Pāriśikṣāṭīkā)[4] or half a mora (according to Uvaṭa).[5] This "interval of silence" between one sound and another, if strictly taken, was inconsistent with the Indian theory of the continuity of sounds as discussed above. Nor are there any positive grounds for the supposi-

1 On Taitt. Prāt., I. 37: *dīrghaplutābhyaṃ parasya vyañjanasya svaraparasya pādamātratvam uktam.*

2 16: *dvimātra uttamo hrasvād adhyardho vyañjanāntaraḥ dīrghād anantaras tadvan mātriko vyañjanāntaraḥ.*

3 XXVII. 5: *virāmo varṇayor madhye hy aṇukālo 'py asaṃyute.*
Com.: . . . "*virāmaḥ tūṣṇīṃbhūtaḥ kālaḥ syāt.*"

4 135: *hrasvottarā yatra tu dīrghapūrvā vatsānusāriṇy api saikamātrā.*

5 On Ṛg Prāt., II. 1.

tion that the hiatus was accompanied by a glottal stop, for it has not been mentioned by Indian grammarians, and no such tendency has been so far discovered in modern Indian languages. By "pause," then, Indian grammarians, to be consistent with their view of the continuity of sounds possibly meant a "glide" between one sound and another, and this seems to be confirmed by the Ṛg Prāt.,[1] which attributes only a very infinitesimal time, a quarter of a mora (time of a Svarabhakti) to the hiatus. The quantity of the "pause" was said to be longer between long vowels than between short vowels; thus the "pause" in *tā́ īm* was longer than that in *prá ṛbhúbhyaḥ*,[2] perhaps because in the former case the quantum of energy was more diffused. Again, the "pause" between long vowels of different quality was said to be longer than that between long vowels of the same quality —e.g., it was longer in *etā́ evá* than in *vā āraṇyam*,[3] probably because in the former case a change in the position of the articulating organs requires more time.

Again, according to the Ṛktantra-Vyākaraṇa[4] and the Vyāsa Śikṣā,[5] the "pause" between two individual sounds in general had a duration of a quarter of a mora, except in a consonant-group, where there was said to be no "pause." The commentary on the Kālanirṇaya Śikṣā,[6] however, rightly combats this view, and says that "if there were a 'pause' between a consonant and a vowel, then the quantity of the vowel in *tat* would become ultra-long (*pluta*), but this is never so perceived." It seems, then, that the "pause" indicated a glide the length of which was over-estimated by some authorities, and kept within more reasonable limits by others.

Quantity of the Anusvāra.—Besides the "three sections" on the rules of quantity, there is another item on which our grammarians

[1] Ṛg Prāt., II. 1.

[2] Uvaṭa on Ṛg Prāt., II. 1: *ubhayato dīrghā pādonamātrākālā tā́ īṃ varddheti.*

[3] Pāriśikṣā: *syātāṃ vivṛtter api yatra yasyāḥ,*
ādyantayoś cāpy asavarṇadīrghau,
madhye visargo yadi vāpi mā vā
vaiśeṣikā mātrikakālayuktā. 139.
. . . .
savarṇabhūtāv api tau bhavetām, sā pādamātrā ca pipīlikā syāt. 141.

[4] II. 34: *varṇāntaraṃ paramāṇu.*

[5] *virāmo varṇayor madhye 'ṇukālo 'py asaṃyute.*

[6] *yadi svaravyañjanayor madhye 'pi virāmaḥ syāt, tadā tad iti padaṃ plutena samakālam avagamyeta, na cāvagamyate.* On verse 25.

give exhaustive details—viz., the quantity of the Anusvāra. The details, however, are of a very minute and subtle character, and probably refer to the pronunciation of individuals or isolated areas. We have, therefore, no means at present to judge their accuracy. For instance, the Śikṣās assert that the Anusvāra was "long after a short vowel, but short after a long vowel. Thus it was long after *haṃsa-*, but short after *māṃsa-*."[1] The Taitt. Prāt.,[2] however, speaks of the Anusvāra as being only "short." The question, then, referred to the length of nasal consonants according as they followed a short or a long vowel, and this must have varied with different dialects. For example, Lahndi seems to confirm the observation of the Śikṣās, for corresponding to Sanskrit long vowel+Anusvāra we have in Lahndi and Panjabi sometimes the long vowel without the Anusvāra—e.g., *Skr. māṃsa-*, but Lahndi *mās*. But after a short vowel Lahndi has preserved the nasal: cf. Sanskrit *daṃśa-*, Lahndi *ḍaṅg*; Sanskrit *vaṃśa-*, Lahndi *vañjh*. Also cf. Siṇā *mos*, Nepāli *mās* (=*māṃsa-*); Hindi *kesu* for Skr. *kaiṃśuka-*.

[1] Laghumādhyandinī Śikṣā, ŚS, p. 115: *hrasvāt paro bhaved dīrgho haṃsa iti nidarśanam, dīrghāt paro bhaved dhrasvo māṃsebhya iti darśanam.*

[2] I. 34.

CONCLUSION

Our study of Indian grammarians has thus established the following points:

1. The reality of the observations. India has been called a land of dreams and subtleties. But the above study gives us at least one exception—viz., the phonetic observations of Indian grammarians. The chapters on Quantity and Doubling have particularly proved the accuracy of the observations and the actuality of the data offered. But what is even more striking is the *importance* of the facts discovered by them. Abhinidhāna, for instance, which was largely responsible for the profound changes in the consonant-system of Primitive Indo-Aryan, was observed to the minutest details.

2. A basis for Indo-Aryan linguistics. The entire system of philologists is sometimes called into question, because the philologist bases his conclusions on the transcriptions of ancient scribes which may have been phonetically wrong. But so far as Indo-Aryan linguistics is concerned, it has inherited a firmer basis from the exhaustive phonetic descriptions of Indian grammarians. The Indian philologist will therefore find a basis and a defence for his system in the above study. It will make Indian linguistics a firmly-based synthesis.

3. A help for the solution of several points. It will now be realized that our study has not a mere antiquarian interest, but has considerable value for the solution of several modern linguistic problems. Some of these—e.g., the short quantity of Anusvāra after a long vowel—have been noted on page 187, and it may be hoped that the reader will find in this study several more solutions of similar problems.

4. A stimulus for further research. There are several interesting points mentioned by the Śikṣās, which, although not borne out by the evidence we possess at present, may have actually occurred in some dialects. For instance, the remarks of the Śikṣās on the doubling of *s* and *h* (pp. 113-115), and on Svarabhakti as an independent syllable after Svarita (pp. 84 ff.), may stimulate the exploration of hitherto unknown dialects, and thus lead to the "Ergänzung" of India's greatest contribution to antiquity.

INDEX OF WORDS QUOTED FROM INDIAN GRAMMATICAL WORKS